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JAPAN

IN THE

BEGINNING OF THE 20TH CENTURY



PUBLISHED BY

IMPERIAL JAPANESE COMMISSION

TO THE

LOUISIANA PURCHASE EXPOSITION

1904

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Preface.

The development which Japan has made in all spheres of public activity during the period of only a few decades that have elapsed since she gave up the policy of exclusion is a matter which has secured the acknowledgment of the world. However the knowledge which the same world possesses about things Japanese is at best superficial, partly because Japan is a new member, comparatively speaking, in the family of nations, but chiefly because reliable publications specially compiled for foreign readers and giving a succinct account of the economic and other affairs of Japan have not existed. It was in consideration of this fact that our authorities decided when they made an arrangement to participate in the Louisiana Purchase Exposition to compile some publication calculated to satisfy, at least relatively, this long-felt desideratum. In May of last year the work of compilation was at once started at all the offices of the Department and at the same time the other Departments of State were asked to furnish material relating to their respective provinces. The result of these compilations is embodied in the present publication. It is very much to be regretted that lack of sufficient time has to a considerable extent prevented the compilation from being made in a more satisfactory manner, has caused redundancies in some chapters and omissions in others, has prevented the work, in short, from being as well proportioned and as carefully written as it might otherwise have been. The difficulties experienced by the translators and the printers were for the same reason,—lack of time, —very great. Under these circumstances it was impossible to bring the compilation up to the level of excellence to which I had intended to bring it at first; but I hope that I shall have an opportunity at some time in the near future, to revise a work in which I flatter myself that I have at any rate succeeded in making a beginning, after which subsequent work of emendation and augmentation will be comparatively easy.

May, 1904.

HARUKI YAMAWAKI,

Secretary of the Department of Agriculture and Commerce, and Japanese Commissioner for the Louisiana Purchase Exposition.

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JAPAN IN THE BEGINNING OF THE 20TH CENTURY.

PART I

INTRODUCTORY.

CHAPTER I—Geography.

Position - Area and Administrative Divisions—Geographical Formation—Geological Formation—Climate.

I. POSITION.

THE TERRITORIES OF JAPAN.—In the north-western corner of the Pacific Ocean and close to the eastern coast of the continent of Asia a chain of islands stretches in an oblique line from north-east to south-west, from the vicinity of the Philippines to the southern extremity of the peninsula of Kamchatka, in Russian Siberia. These countless islands large and small constitute the Empire of Japan. To be more precise, the territories of the Empire consist of five large islands and about six hundred smaller ones. Our most southerly degree of latitude is 21° 48′ N. at the northern extremity of the island of Formosa, and our most northerly degree of latitude is 50° 56′ at the northern exremity of Araito island, Shumshu district, Chishima province (the Kuriles); while, as regards longitude, the position of "Flower Island," the most westerly of the Pescadores, corresponding to 119° 20′ E. Greenwich, is the limit of our Empire on the west; and the position of Shumshu island, Shumshu district, Chishima province corresponding to 156° 32′ E. Greenwich, is the eastern limit of Japanese territories. In latitude, there-

fore, Japan extends 29 degrees 8 minutes, and in longitude 37 degrees 12 minutes. As the greatest length of each island is, however, generally from south-west to north-east, and as the breadth from east to west is comparatively less, and, furthermore, as the whole series of islands from Formosa in the south to Chishima in the north runs from south-west to north-east almost in one continuous line, Japan contains a smaller extent of land than one would expect from the enormous distance separating its northern from its southern extremity.

The five large islands mentioned above are Honshu, Shikoku, Kyūshu, Hokkaidō and Formosa; then follow as to size the five islands of Sado, Oki, Iki, Tsushima, Awaji and the Pescadores (which are, however, a group of islands), and finally of the three archipelagoes of Chishima, Ogasawara (the Bonin Islands) and Okinawa (the Luchu). Of the above islands Honshu is the broadest. In shape it somewhat resembles the figure of a fabulous dragon with its head erect.

Honshu.—Honshu is bounded on the north by the Pacific Ocean, while on the north-west it looks across the Sea of Japan towards the Korean peninsula and the eastern coast of Siberia. But for the intervening Inland Sea it would embrace within the curve of its southern extremely the island of Shikoku. As for the lesser islands of Honshu, there are in the Sea of Japan the two islands of Sado and Oki, and in the Pacific Ocean the Ogasawara archipelago which form, in a sense, the southernmost extremity of Honshu. In the famous Inland Sea, off the western coast of the provinces of Kii and Izumi lies the island of Awaji, covering an area of 36 square *ri*, and forming as it were a connecting link between Honshu and Shikoku.

Shikoku.—Shikoku is the smallest of the five great islands. Its north-eastern coast faces, across the Inland Sea, the provinces of Kii, Izumi, and the southern coast of the Sanyō-dō route. The island is washed on the south by the Pacific Ocean and is separated at its northern extremity by the Strait of Bungo from the provinces of Buzen and Bungo on the eastern coast of Kyūshu.

Kyushu.—Kyūshu lies to the west of Honshu and Shikoku and is a large island measuring more from north to south than it does from east to west. The two islands of Iki and Tsushima lie to the

north of Kyūshu and belong to it geographically as well as for administrative purposes. The latter lies opposite the port of Fusan in Korea, from which it is separated by the narrow passage known as the Strait of Korea. It may be noted that the western part of Kyūshu faces the eastern coast of China, though at a greater distance than Tsushima is from the coast of Korea, the intervening seas being the Yellow Sea and the China Sea. Okinawa lies off the southern extremity of the island of Kyūshu and runs in a south-westerly direction. The most southerly island in the Okinawa group is Haterumajima, whose coast-line runs parallel to the eastern coast of northern Formosa and is situated at 24° 6′ N. L. Finally, the western side of the whole archipelago faces the provinces of Chiangsu, Chekiang and Fukien of China, while the eastern side is washed by the waters of the Pacific.

Formosa.—Formosa forms the southernmost limit of our territories. It lies due south of the most southern island of the Okinawa archipelago and at no great distance from the northern shore of the island of Luzon, one of the Philippine group, from which it is separated by the Strait of Bashi. The western coast of Formosa faces the province of Fukien, China, and midway between the two lies the Pescadores. The coast is fairly well indented; its principal harbors are Tansui (Tamsui), Anpei (Anping) and Takao, all of which ports supply shipping facilities between the island and the interior of China. The eastern coast of Formosa is, on the other hand, a magnificent line of precipitous cliffs and affords, therefore, very few, if any, good anchorages. The harbor of Kelung is, it is true, a tolerable port, but it is situated on the northern and not on the eastern coast.

The Pescadores group consists of no less than 47 islands, mostly small; and owing to the naturally advantageous position of the group lying half-way between Formosa and the eastern coast of southern China, it serves as a place of refuge for ships sailing along the coast of Formosa and between that coast and the opposite shores of China.

Hokkaido.—Hokkaidō, formerly known by the name of Yezo, is a large island situated to the north of Honshu from which it is separated by the Strait of Matsumaye (or Tsugaru, as it is called in some maps). This island is (if we leave out the Kuriles) the north-

ern limit of our Empire, and its western coast lies opposite the northern coast of Korea and the eastern coast of Russian Siberia, while its most northerly point comes close to the southern extremity of the island of Saghalien from which it is only separated by a narrow passage, the Strait of Soya. The coast of Kitami which extends eastward from Cape Soya to the Bay of Nemuro faces the Chishima group and the promontory of Kamchatka and forms, as it were, the southern boundary of the Sea of Okhotsk.

The whole south eastern coast of Hokkaidō proper is washed by the Pacific.

Chishima is a volcanic group stretching north-easterly in an oblique line from the Bay of Nemuro in which Etrup, the most southerly of the group lies, and terminating near the southern extremity of Kamchatka. The whole chain separates the Sea of Okhotsk from the northern Pacific.

GEOGRAPHICAL RELATIONS OF JAPAN TO FOREIGN COUNTRIES.—To describe briefly the geographical relations of our Empire to foreign countries, we find to the east and on the opposite side of the Pacific Ocean the western shores of the British Dominion of Canada as well as those of the United States of America. The harbor of Yokohama lies almost in a straight line with San Francisco, 4,722 nautical miles distant. Then, to the north-west of Japan and on the other side of the Sea of Japan, lies the vast plain of Russian Siberia.

Vladivostock lies opposite the southern part of Hokkaidō, while the northern coast of Korea is separated by the Sea of Japan from the two main divisions of Honshu, viz., San-in and Hokuriku.

The harbor of Fusan which is situated at the southern extremity of the peninsula of Korea lies close to the northern portion of Kyūshu; while, opposite the main bulk of Kyūshu, lie the provinces of China that are bordering on the Yellow Sea, the Eastern Sea, and the China Sea.

Formosa, being the most southerly possession of the Empire, forms an important station for the carrying on of our intercourse with the islands in the South Pacific and with Australia. Its economic development has, since its annexation to Japan in 1895, been

very striking; and there are great hopes of an increased advance in the same direction.

In regard to geographical position, which naturally bears an important relation to national prosperity, Japan may be said to be advantageously situated, her territories extending in the temperate zone from 21° to 50° N. L., and enjoying in consequence a climate excellently suited for industrial pursuits. It was quite in accordance, therefore, with the nature of things that our forefathers should have called the land "Toyo Ashiwara no Mizuho no Kuni" (Land of Plenteous Ears of Rice in the Plain of Luxuriant Reeds). Moreover the country is, we need hardly remark, one of great natural beauty and is inhabited by a people who are universally acknowledged to possess a singularly refined taste in all artistic matters and whose great attainments in the arts, pure and applied, have always been admitted on all sides.

Japan's Unique Nationality.—Owing to its peculiar geographical position our country constitutes a community distinct in several respects, socially and politically, from the adjacent countries of Asia. The most marked of these distinguishing traits is that Japan has, for more than 2,550 years, been ruled by the same Imperial Family, without a solitary break in the succession, thus offering a strong contrast to China and Korea, where frequent dynastic changes have taken place. Then the great natural valor of the people has guarded like an impregnable wall the coasts of their islands, with the result that never once during these two thousand years and a half has the country been desecrated by foreign aggression. All these facts have enabled our people to maintain intact their peculiar customs and unique nationality; but it cannot of course be denied that in culture, in the arts, in political institutions and in other civilizing factors, Japan has, as a natural and invariable result of geographical proximity, learned much from China, Korea, and even from India, exactly as in mediæval Europe England learned much from France, England and France much from Italy, and Italy much from Greece and Constantinople.

The remark just made of Japan's maintaining intact its peculiar customs and its unique nationality, can hardly be made with strict accuracy to-day, for, owing to the opening up of the country to

foreign intercourse and commerce a little over 50 years ago, a very extraordinary change has come over this Empire, a change which has affected not only the internal state of the country but its external relations as a member of the family of nations as well. It need not be stated here, for the fact is sufficiently well known, how quite recently the intrinsic strength of Japan began to be suddenly recognized all over the world, and how Japan pushed her way to the front rank in the comity of nations.

American Continents.—In fact our country has become a focus of navigation routes in the Pacific and a great market in the Far East. This is what it should be, for to our east we have Canada, the United States of America, Mexico, and the Pacific coast of South America, with all of which we are engaged, or are about to engage, in active commerce. We build our greatest expectations on the United States of America, which is at present our best customer. The leading harbors on its Pacific sea-board, that is San Francisco and Seattle, together with Vancouver and Victoria of British Columbia, are connected with this country by regular steamship lines; and it is easy to see that Japan's commercial relations with Europe will be altered for the better on the completion of the Panama canal.

Asiatic Countries.—Then to our north-west we have, as has been already pointed out, the vast extent of Russian Siberia, whose great trans-continental railroad, just completed, brings Europe and Japan nearer to each other than ever they were before. Further, there is Korea which, owing to its proximity, is inviting us to exploit its resources and to stimulate it by the introduction of our industrial and commercial activity. Of course, our commercial relations with China are far more important. We need not point out that this vast empire covers an area of 760,000 square *ri* and contains about 400 million souls. A near relation of ours, this great empire naturally looks to us for help in her endeavors to advance along the path that we have already trodden and to have its vast resources exploited by the money and enterprise of foreign countries. There can be no manner of doubt, therefore, that China's commercial relations with us will become in the future one of far greater importance than they are to-day, especially when the comparative proximity of the two lands is taken into consideration, none of the

Chinese harbors being separated from our harbor of Nagasaki by more than 700 nautical miles. Hongkong, too, though politically forming part of the British dominions, is a place of importance to us in connection with Chinese commerce, serving as it does as an important market for the goods going from Japan to China or *vice versa*. Indeed it occupies the second place on our list in regard to the volume of commercial transactions. It is separated from Nagasaki by 1,070 miles, while between it and the port of Anping, Formosa, the distance is only 300 miles.

South Pacific.—Lastly, turning our eyes southward, we find Australia with its fertile fields and rich resources, while the Philippines, Java, Dutch India, British India and so on promise to establish in the future far more active commercial relations with us than are existing at present.

II. AREA AND ADMINISTRATIVE DIVISIONS.

AREA.—The whole area of our Empire covers 27,062 square *ri*, corresponding roughly to the 325th part of the entire land surface of the globe and to 107th part of the entire land extent of the continent of Asia. The whole area is distributed as follows among our principal islands.

Principal islands.	No. of minor islands.	Area (sq. *ri*.)
Honshu	166½	14,571.12
Hokkaidō	12	5,061.90
Kyūshu	150	2,617.54
Formosa	29	2,253.24
Shikoku	74½	1,180.67
Chishima (32 islands)	—	1,033.46
Okinawa (55 islands)	—	156.91
Sado...	—	56.33
Tsushima	5	44.72
Awaji.....	1	36.69
Oki	1	21.89
The Pescadores	47	14.33
Iki...	1	8.63
Ogasawara (20 islands)	—	4.50

It will thus be seen that, if 100 represents the whole area of the Empire, Honshu occupies 53.84 parts, Hokkaidō 18.70, Kyūshu 9.67, Formosa 8.33, Shikoku 4.36, Chishima 3.82 and the rest 1.28.

Comparing our area with that of some other countries, it is found to be 1/30 of the area of Russian Siberia, 1/26 of that of China, double that of Korea, 1/22 of that of the United States of America, 1¾ of that of the British Isles, about 26/100 less than that of France, and about 29/100 less that of Germany.

ADMINISTRATIVE DIVISIONS.—For administrative purposes our country is divided into forty-six prefectures together with Hokkaidō and Formosa, these prefectures being as follows:—Tōkyō, Kyōto, Ōsaka (these three being called *Fu*), Kanagawa, Saitama, Chiba, Ibaragi, Tochigi, Gumma, Nagano, Yamanashi, Shizuoka, Aichi, Miye, Gifu, Shiga, Fukui, Ishikawa, Toyama, Niigata, Fukushima, Miyagi, Yamagata, Akita, Iwate, Aomori, Nara, Wakayama, Hyōgo, Okayama, Hiroshima, Yamaguchi, Shimane, Tottori, Tokushima, Kagawa, Ehime, Kōchi, Nagasaki, Saga, Fukuoka, Kumamoto, Ōita, Miyazaki, Kagoshima, Okinawa (all of which are called *Ken*). Each *Fu* or *Ken* is in turn subdivided into *Shi* (city or urban district) and *Gun* (rural district), the latter of which is further subdivided into *Chō* (town) or *Son* (village). As the administrative system exists at present, the *Shi*, *Chō* and *Son* constitute the smallest division for administrative purposes forming a self-governing entity, while the *Gun* and prefectures attend as direct administrative subdivisions of the country to the affairs of state, being at the same time allowed some degree of autonomy. In Hokkaidō the local administrative system was inaugurated in 1897 while in Okinawa the administrative and self-governing system of its own was inaugurated in the preceding year. At present there are throughout the country (exclusive of Formosa) 638 *Gun*, 58 *Shi* (the administrative districts in Hokkaidō aud Okinawa included), 1,054 *Chō*, 13,468 *Son* (exclusive of those of the seven islands of Izu and Ogasawara). The administrative and other matters pertaining to Formosa will be described later on under a separate heading.

HONSHU.

Name of prefecture.	Area.	No. of *Gun*.	No. of *Shi*.	No. of *Chō*.	No. of *Son*.
Tōkyō-fu...	125.80	8	1	20	158
Kanagawa-ken	155.67	11	1	22	206
Saitama-ken	265.99	9	—	42	350
Chiba-ken	326.15	12	—	66	289

Name of prefecture.	Area.	No. of *Gun.*	No. of *Shi.*	No. of *Chō.*	No. of *Son.*
Ibaragi-ken	385.18	14	1	44	336
Tochigi-ken	411.77	8	1	29	146
Gumma-ken	407.25	11	2	36	171
Nagano-ken	853.76	16	1	21	372
Yamanashi-ken	289.85	9	1	6	241
Shizuoka-ken	503.82	13	1	35	307
Aichi-ken	312.78	19	1	68	602
Miye-ken	368.55	15	2	19	325
Gifu-ken	671.45	18	1	39	305
Shiga-ken	258.44	12	1	7	195
Fukui-ken	272.40	11	1	9	171
Ishikawa-ken	270.72	8	1	15	260
Toyama-ken	266.41	8	2	31	239
Niigata-ken	824.59	16	1	54	762
Fukushima-ken	846.07	17	1	31	389
Miyagi-ken	540.79	16	1	27	176
Yamagata-ken	600.15	11	2	24	205
Akita-ken	754.00	9	1	31	208
Iwate-ken	899.19	13	1	22	218
Aomori-ken	607.03	8	2	7	161
Kyōto-fu...	296.55	18	1	18	263
Ōsaka-fu	115.72	9	2	11	293
Nara-ken...	201.42	10	1	18	142
Wakayama-ken	310.62	7	1	14	217
Hyōgo-ken	556.68	25	2	29	402
Okayama-ken	420.98	19	1	20	427
Hiroshima-ken	520.78	16	2	27	422
Yamaguchi-ken	389.99	11	1	5	226
Shimane-ken	435.82	16	1	12	321
Tottori-ken	224.16	6	1	7	228
Total	14,690.53	429	40	866	9,733

SHIKOKU.

Tokushima-ken	271.28	10	1	2	137
Kagawa-ken	113.50	7	2	11	169
Ehime-ken	341.17	12	1	16	285
Kōchi-ken	454.72	7	1	11	186
Total	1,180.67	36	5	40	777

KYŪSHU.

Name of prefecture.	Area.	No. of *Gun.*	No. of *Shi.*	No. of *Chō.*	No. of *Son.*
Nagasaki-ken	335.15	9	1	15	288
Saga-ken	160.08	8	1	7	127
Fukuoka-keu	317.81	19	4	37	344
Kumamoto-ken	465.47	12	1	29	338
Ōita-ken	402.73	12	—	25	256
Miyazaki-ken	487.34	8	—	7	93
Kagoshima-ken	602.31	12	1	—	380
Total	2,670.89	80	8	120	1,826
Okinawa-ken	156.91	5	2	—	563
Hokkaidō	6,095.36	88	3	28	569
Formosa	2,267.57	—	—	—	—
Grand total...	27,061.93	638	58	1,054	13,468

OLD ADMINISTRATIVE DIVISIONS.—The present divisions are traceable to the first administrative divisions marked out by the Imperial Government in July, 1871. After the surrender of the Regency by the Tokugawa Shogunate in the year 1867 and the reinstatement of the Imperial Government, the local administrative system was established by subdividing the country into the three main divisions, of *Fu*, *Han*, and *Ken*, with *Fu-Chiji* (Governor of Fu) *Ken-Chiji* (Governor of Ken), or *Han-shu* (Governor of Han) placed over these divisions respectively. At that time, therefore, the local administration was conducted in conformity with the former Han (or feudal) administrative system. It was in 1872 that the system was completely reorganized, though even then the country was subdivided into as many as 1 *Dō* (colonial organization), 8 *Fu* and 302 *Ken*. Similar amalgamations and separations have frequently been carried out subsequently, till at last the existing local system has been evolved.

Apart from the present administrative subdivisions there survives from former times another system of local subdivisions of historical importance. These divisions are the 8 *Dō* (or routes) and 85 *Kuni* (or provinces). In tracing up the development of this particular system, it is found to have originated in the subjugation of the country by the first Emperor Jimmu, who established a feudal

system and placed in important districts followers of his own who had distinguished themselves, conferring upon them the official title of *Kuni-no-Miyatsuko* or *Agata-nushi*. It will thus be seen that the local subdivisions of provinces were at first of political origin. The subsequent Emperors followed the example set by their ancestor, and marked out the subdivisions of *Kuni* and *Agata* with a *Kuni-tsuko* appointed over each of them. All these subdivisions were determined by geographical considerations. It was however after the great change carried out by the Emperor Temmu (673–685 A.D.) that the names of Kinai and 7 *Dō* were first fixed upon, while, again, between 717 A.D. of the reign of the Empress Gensei (715–723) and the Tencho era (824–833) of the Emperor Junna (824–833) the small subdivisions of *Kuni* and *Gun* were first determined upon. According to the system then elaborated, the whole country was subdivided into Kinai and 8 *Dō* and 68 provinces, with the island of Yezo as a sort of outlying territory. The *Dō* comprised Nankaidō, Tōkaidō, Hokuriku-dō, Tōsan-dō, Sanyō-dō, San-in-dō, and Saikai-dō (or Kyūshu). Kinai was, properly speaking, also one of these *Dō*, but this special designation was given to it in view of the fact that the five provinces of Yamashiro, Yamato, Kawachi, Izumi, and Settsu which constituted Kinai were situated round the then capital of the country. Nankai-dō comprised Kii, Awaji, Awa, Sanuki, Iyo and Tosa (the latter four of which constitute Shikoku). A stretch of land lying on the east of Kinai and extending along the eastern coast of Honshu was called Tōkai-dō. It comprised Iga, Ise, Shima, Owari, Mikawa, Tōtōmi, Suruga, Kai, Izu, Sagami, Musashi, Awa, Kazusa, Shimōsa, and Hitachi, 15 provinces in all. Hokuriku-dō was a stretch of land lying along the Sea of Japan and situated to the north of the central portion of Honshu. It consisted of the seven provinces of Wakasa, Echizen, Kaga, Noto, Etchu, Echigo and Sado. Tōsan-dō lay between Tōkai-dō and Hokuriku-dō and extended northward along the centre of Honshu till it reached its northern extremity, the eight provinces of Ōmi, Mino, Hida, Shinano, Kōzuke, Shimozuke and Mutsu composing it. Sanyō-dō was the southern strip of land of Honshu to the west of Kinai and lying along the Inland Sea. It comprised the eight provinces of Harima, Mimasaku, Bizen, Bitchu, Bingo, Aki, Suwo and Nagato.

San-in-dō was situated at the back of Sanyō-dō, facing the Sea of Japan and contained Tamba, Tango, Tajima, Inaba, Hōki, Izumo, Iwami and Oki. Lastly Saikaidō contained Chikuzen, Chikugo, Buzen, Bungo, Hizen, Higo, Hyūga, Ōsumi, Satsuma, and the two outlying islands of Iki and Tsushima. The island of Yezo now Hokkaidō before it was subdivided into provinces subsequent to the Restoration, was known by the collective name of Yezo.

Although, as described above, our original local subdivisions owe their existence to considerations of administrative convenience, they lost much of this original significance subsequent to the period of the ascendancy of the Genji and Heikê clans, when the real power of the country passed into the hands of the military classes and feudalism gradually came into existence. The powerful clans began to set themselves up in various parts of the country and while some absorbed several provinces, each of the minor clans had to content itself with holding only a part of one province.

Important changes ensued in the local arrangements on the advent of the rehabilitated Imperial Government. In the year 1868 the province of Mutsu was split up into Iwaki, Iwashiro, Rikuzen and Rikuchū, and the province of Dewa into Uzen and Ugo. Further, in 1869, the name Yezo was superseded by that of Hokkaidō and the island thus designated was subdivided into the 11 provinces of Oshima, Shiribeshi, Iburi, Ishikari, Teshiwo, Hidaka, Tokachi, Kushiro, Nemuro, Kitami and Chishima. Hokkaidō was further subdivided into 86 *Gun*, and an "Imperial Colonization Commission" (Kaitakushi) was despatched to take charge of the administration of the island.

In the year 1872 the Okinawa group was given a collective designation, being called the Province of Luchu, and joined to Nankai-dō. In 1875 Saghalien was, as the result of a treaty with Russia, exchanged for the Etrup group which was annexed to Chishima.

It will thus be seen that according to this special system of local subdivisions the country at present comprises 1 Kinai and 8 *Dō*, with 85 provinces. This classification no longer, however, possesses any of the political importance which once attached to it, but it is still in vogue, side by side with the existing administrative

system. Being the oldest system of this description, it is of some archæological interest as it also serves more or less as indicating a natural and geographical boundary for the manners and customs of the different places.

III. GEOGRAPHICAL FORMATION.

MOUNTAIN RANGES.—Japan is on the whole mountainous, extensive plains being comparatively rare. Owing to the mildness of the climate and the abundance of the rainfall, forests are found everywhere throughout the land, feeding the headwaters of rivers, which in turn intersect the country in almost every direction and serve as means of irrigation as well as highways for transportation. Our country also lies along one of the world's most noted volcanic routes, and the volcanic cones that stand in almost every part tend very much to add to the diversity of the natural scenery and to heighten by contrast the natural beauty of the country, however destructive they may be at times.

FORMATION OF THE RANGES.—The mountain ranges of Japan may be classified into two main divisions, namely Paleozoic and volcanic. These two kinds of ranges intersect each other in many places and generally extend along the central portion of the land, dividing it therefore into two sections and also forming its watershed.

Two great Systems.

The mountain ranges may by their general formation be divided into two great systems, the northern and the southern. The former extending from north to south, is known by the name of the Saghalien system, as it starts from the Russian island of Saghalien. It passes into our territory at Hokkaidō, where it branches out into several subsidiary ranges. It then takes a south-westerly course, and enters Honshu by the northern coast. In the central portion of Honshu it spreads out into several high ranges. It is here that the Saghalien system encounters the Kunglung system coming from the south.

Saghalien System.

The Kunglung system, otherwise called the Chinese system,

takes its rise in the Kunglung range in China. After traversing the central portion of the island of Formosa, it divides itself into two sub-ranges, one of which enters Kyūshu from the south-western coast and reaches Honshu *via* Shikoku and the peninsula of Kii. Finally, it passes through the provinces of Yamato, Mikawa and Tōtōmi and ends on the borders of Shinano. The other sub-system enters Honshu from its western coast, separates the San-in and Sanyō-dō regions, and passes along the northern side of Lake Biwa till it enters the province of Hida, where it is met by the other sub-system and also the Saghalien system. The consequence of this meeting is that many lofty peaks are formed in Hida. This encounter of the different systems also results in the sending southward of a chain of volcanic peaks which, beginning in Suruga and Sagami, passes on to the islands of Izu and far into the Pacific Ocean. This chain is known by the name of the Fuji volcanic chain.

Kunglung System.

Hokkaidō Ranges.—The Paleozoic mountain system in Hokkaidō begins at Cape Soya. After passing along the border of the provinces of Kitami and Teshiwo it meets with, in the central part of the island, the Chishima volcanic mountain system that enters the island from its eastern coast. At the junction several high peaks such as Teshiwo (5,247 *shaku*), Ishikari (6,715 *shaku*), Tokachi (5,979 *shaku*) are formed. This Paleozoic chain separates Hidaka from Tokachi and finally extends southward as far as Cape Erimo.

Paleozoic System.

The volcanic chain mentioned above originates in the western part of Kamchatka and, after extending to the south-west and forming the volcanic archipelago of Chishima, it enters via Kunajiri island the main island of Hokkaidō at the boundary between Nemuro and Kitami. This system encounters another system at the boundary between Kitami and Kushiro and this meeting place of the two mountain systems is marked by such volcanic cones as Raushi-san (5,400) Shari-dake (5,200), Oakan (4,979), and Me-akan (5,336). There is another volcanic chain in the south-western part of the island. It originates in the sea off the coast of northern Teshiwo, enters Kushiro and Iburi, and forms Tarumaye-san (2,929), Noboribetsu

Volcanic Chain.

(3,375) and Usu-dake. It enters by way of Volcano Bay the peninsula of Oshima where it forms Komagatake (3,626) and Esan (1,386) and finally crosses over to the main island of Japan *via* the Strait of Tsugaru. This is called the Iburi volcanic system.

Owing to this peculiar geographical formation, the island of Hokkaidō surpasses all the other parts in the Empire in possessing extensive forests and plains, these two measuring no less than 8,900,000 *cho* in area. Hokkaidō therefore is noted for its timbers which are excellent for general architecture and shipbuilding. The Yūbari coal mines situated at the foot of Mount Yūbari are, together with the Poronai and Utashinai coal mines, famous for the coal they produce.

Northern Ranges of Honshu.—There are two mountain ranges in the northern part of Honshu. One of them takes its rise on the southern bank of the river Hachinohe, Mutsu. It then runs southward, enters Rikuchu, and finally reaches the vicinity of the Bay of Matsushima, after extending along the eastern bank of the river Kitakami. In this range Hayai-dake (6,270), Yakushi-dake, and Murone-san are the highest peaks.

Kitakami Range.

The other range arises at the headwaters of the river Abukuma, and stretching southward it enters Hitachi. Reizan and Hayama (3,548) Yadaijin-san and Akai-dake (2,376), Hakko-san (3,323) and Kaba-san (2,531) and Tsukuba-san (2,897) form the crests of the chain. Of the two, the former range is known by the name of the Kitakami range and the latter by that of the Abukuma range.

Abukuma Range.

Volcanic Ranges in North-eastern Honshu.—There are two ranges of volcanic cones in the north-eastern part of Honshu, the two together forming the backbone of that island. One originates at Osore-yama at Tonami Peninsula and terminates at Asama-yama, Shinano. Yakkōda-san (5,232), Ganju-san (6,797), Zōō-dake (6,481), Ōbandai-san (6,072), Hiuchi-yama (6,539), Komagatake (6,811), Nasu-dake (6,310), Akagi-san (6,431) are the loftiest peaks in this range, which at Nikkō spreads out into a medley of high peaks. This is called the "Tōtō central volcanic range." The other is known

Toto Volcanic Range.

by the name of U-yetsu volcanic range and starts from Iwaki-san (5,161), Mutsu. Like the former, it enters Shinano, sending up along its route Chokai-san (6,885), Haguro-san, Gessan (6,780), Yudono-san, Mikagura-san (4,022) and Shirane-san (7,069).

U-yetsu Volcanic Range.

These two ranges form the watershed of the north-eastern section of Honshu and send the rivers taking their rise in it into the Sea of Japan on one hand and into the Pacific Ocean on the other. The forests abounding in the forests of Aomori and Akita-ken are noted for the production of fine timber, while the forests in the Nikkō group produce excellent timbers of *sugi* (Japanese cedar) and *hinoki* (Japanese cypress). Then in the U-yetsu range there is the Ani copper mine in Ugo and the Ozaruzawa copper mine in Riku-chū, while the famous copper mine of Ashiwo is situated in the Nikkō group.

Fuji Volcanic Ranges.—The meeting of the Saghalien and the Kunglung mountain systems at the boundary of Shinano and Hida results in great up-heavals of the surface, one of the most noteworthy being the Fuji volcanic range which, with Mount Fuji as a centre, extends northward to the headwaters of the river Arakawa at Echigo, and extends southward to the seven islands of Izu, finally terminating in the Ogasawara group. In the northward arm there are, at the boundary between Shinano and Hida, Iwo-zan (10,074 ft.), Norikura-dake (10,447), On-take (10,345). Yatsuga-take (9,675) stands at the boundary between Kai and Shinano. The upheavals of which we speak culminate at last in Mount Fuji, the highest peak in Japan proper with an elevation of 12,450 *shaku* above the sea-level. Mount Fuji possesses the typical shape of a volcanic cone. Except in the height of the summer season, the summit is covered with snow, and its majestic shape is a good landmark for navigators. It ought to be added that the northern arm contains in the central portion of Shinano an extensive plateau with villages situated over 2,500 *shaku* above the sea-level. Lake Suwa, which is situated here, is a big extinct crater, and is situated 2,637 *shaku* above the sea-level.

Mt. Fuji.

Ranges in Central Honshu.—There are four subsidiary

ranges in the central part of Honshu, of which the Hida, the Kiso, and the Akaishi ranges belong to the Kunglung system while the remaining Kwantō range forms part of the Saghalien system.

Hida Range.

The Hida range originates in Mount Katakari which towers at the boundary between Etchū and Echigo. After forming Mount Rengê (9,682) and Tateyama (9,372) it enters Hida, and makes that province exceedingly mountainous. The Mozumi and Shikama mines, which are noted for their lead and silver, are found in this range.

Kiso Range.

The Kiso range originates in Mount Komagatake (9,934) situated at the headwaters of the river Kiso and extends southward as far as the centre of the province of Mikawa. This range abounds in steep passes and precipitous gorges, as also in dense forests producing the famous "five timbers of Kiso."

Akaishi Range.

The Akaishi range starts with Akaiwa-san (10,206) which stands at the boundary between Shinano and Suruga. After running southward between the basins of the rivers Ōi and Tenryū, it sends up Omugen-zan (7,692) and Kuroboshidake (7,132), and ends at Akiwa-san and Dainichi-san.

Kwanto Range.

The Kwantō range forms the boundary of Shinano, Musashi, and Kōzuke, and runs in a south-easterly direction. Kobushi-dake (8,094) and Kumotori-san (6,603) are the highest peaks in this range. The two passes of Sasago (3,488) and Kobotoke occur in the ridge of the range.

Kii Range.

The Kii range comprises the elevations found in Kii, Yamato and Shima. A chain of hills extending from Kōya and Hatenashi-dake (3,399) and the Yoshino group containing Takamiyama (4,422) and Odaigahara (5,295) may also be mentioned here. The forests of Yoshino are famous for their caders.

Chugoku Ranges.—The Chūgoku ranges, part of the Kunglung system, enters Honshu and Kyūshu, and form the boundary line between the Sanyō and San-in routes as also a watershed for these two regions, sending rivers, on the one hand, northward to the Sea of Japan and, on the other hand, southward to the Inland Sea. This range extends to the north of Lake Biwa, but its peaks are comparatively low. Mount Jakuji (4,478) on the border of the

three provinces of Suwo, Aki, and Iwami, and Hiyei-zan and Hiradake (4,068) rising from the shores of the lake are the highest peaks in the range.

Volcanic Ranges in Chugoku.—At the same time a chain of volcanic cones extends along the western part of Honshu, running almost parallel to the Kunglung range above mentioned. It starts at the northern extremity of the province of Nagato, produces Sambe-san (4,049) at the border of Iwami and Izumo, and Daisen (6,194) at Hōki. It passes on to Echizen *via* Tajima, where it is represented by Dainichi-dake (5,979) situated at the border of Echizen and Hida, and finally ends with Haku-zan (8,712) in Kaga. This volcanic chain is therefore known by the name of Haku-zan volcanic chain.

Haku-zan Volcanic Chain

Shikoku Ranges.—The mountain range of Shikoku is also a part of the Kunglung system and comes from Kyūshu. It starts at the western extremity of Shikoku with Jōgashiro-san (3,573). After sending up Mount Ishitsuchi (6,920) and some others at the border of Iyo and Tosa, and forming Isurugi-zan (7,393) at Awa, the highest peak in Shikoku, it passes on to the south of Tokushima, to join the Kii range across the narrow intervening arm of the sea. This range of Shikoku divides the island into two halves, northern and southern, and therefore serves as a watershed for the two divisions. The island has besides, a volcanic chain, also coming from Kyūshu.

Kyushu Ranges.—Though constituting a link of the Kunglung system in Japan, the mountain range of Paleozoic formation which is found in Kyūshu is comparatively low. At the west it rises on the shore of Higo, extends north-eastward, to send up Kunimi-dake and Obayama (6,550), till, coming to Saga, it crosses over to Shikoku. The volcanic chains, two in number, are more noteworthy, one of them being called the Kirishima chain and the other the Aso chain. The former originates at a considerable distance to the south, that is, in the sea off the coast of Formosa. After manifesting its presence on the small islands off Satsuma, and on Sakura-jima which is situated in the Bay of Kagoshima, it reaches Kirishima-yama (4,816), after which it disappears into the sea off

Kirishima and Aso Chains.

Yatsushiro. The Aso chain consists of Tara-dake in the Hizen Peninsula, Onsen-dake (4,470) in the Shimabara Peninsula, and Aso-san (5,577). After proceeding to Bungo, the chain disappears in the sea off Suwo.

FORMOSA RANGES.—Formosa is traversed southward from its central part by the Gyoku-san range which subdivides that section of the island into eastern and western halves. The former district has a coast line composed of abrupt cliffs, while the latter, though on the whole hilly, is fringed by a fertile plain extending as far as the coast and with streams running through it. Gyoku-san or Mount Niitaka (sometimes also called Mount Morrison), which gives its name to this range, is the highest peak in the whole of Japan, rising as it does 14,355 *shaku* above the sea-level. Its summit is often covered by snow even in the hottest season, and was formerly called the "Jewel Mount" by the Chinese. To the east of Hōzan stands Mount Katō (9,108) and to the north Mount Kantaban (9,956), the two peaks forming the extremities of the range. At the northern part of the island, which is also hilly, no regular mountain system is found, excepting a little volcanic group, of which Daiton-san is the most important peak.

Mt. Niitaka.

PLAINS.—Owing to the hilly nature of the land, the plains in Japan mostly consist of mountain or river valleys, and also the slopes of mountains, so that, strictly speaking, they cannot be called plains at all, at least in the sense in which the term is understood in America, Australia or Siberia. Even if we do regard them as plains, we find them to be comparatively limited in extent compared with the plains of most other countries.

PLAINS IN HOKKAIDO.—Hokkaidō has, however, four real plains, namely, the Ishikari plain, the Tokachi plain, the Teshiwo plain, and the Kushiro plain. Of these the first, which is the basin of the river Ishikari, is the most extensive occupying as it does an area of about 37 *ri* by 5 *ri*. The basin of the lower course of the river is extremely fertile, but that in the upper course is rather sandy and consequently less fertile. The second plain is the basin of the river Tokachi and measures

Ishikari, Tokachi, Teshiwo, and Kushiro Plains.

about 20 *ri* both in length and breadth. The soil is fertile. The two rivers are partly navigable. The valley of the river Teshiwo forms the Teshiwo plain, while the Kushiro plain is situated in she southern part of the province of Kushiro. It is comparatively humid and not quite as fertile as the other three.

Plains in Honshu.—There are about eight plains worth mentioning in the island of Honshu. Of these, two are in the northern part. One of them is formed by the basin of the river Kitakami and lies between the Central volcanic range and the Kitakami range; the other is the basin of the river Abukuma which lies between the Central volcanic range and the Abukuma range. The Kitakami plain extends from the neighbourhood of the city of Morioka and extends southward as far as Sendai. The soil is generally fertile, especially in the lower part of the basin. The other extends over the two provinces of Iwaki and Iwashiro. It is liable to be flooded in the rainy season, but the soil is good. The two plains are collectively called the plain of Mutsu and are traversed by the trunk line of the Nippon Railroad.

Kitakami Plain.

The Aizu plain, though well adapted for cultivation, is extremely limited in extent, being practically the border of Lake Inawashiro. On the other hand the Mogami plain, the valley of the river of the same name, is, though the cold is somewhat severe there in winter, an excellent agricultural district. Its resources are likely to prove far more valuable in future than at present when the Government Southern O-u Railroad now extending from Fukushima to Yamagata *via* Yonezawa shall have been completed.

Aizu Plain

Mogami Plain.

The plain of Echigo, which measures about 40 *ri* from north to south and is watered by the rivers Shinano, Akano and others, is the most important rice-producing district in the whole of Japan, the soil being well adapted for the cultivation of what we may well call the national cereal.

Echigo Plain.

The Kwantō plain is the widest alluvial plain in our country and is also one of the most prosperous. It extends over the four prefectures of Tokyo, Saitama, Chiba, Gumma and Ibaragi, and measures between 30 or 40 *ri* in length

Kwanto Plain.

and breadth. This plain is watered by the navigable river Tone, besides possessing lagoons and ponds, and thus enjoys the greatest convenience in the matter of transportation, both by land and water. With the metropolis of the Empire and many other flourishing cities situated in it, this plain is a very important district both from the industrial and the agricultural points of view.

Plains in central Honshu.—The Mino-Owari plain, the most important plain in the central part of Honshu, is the valley of the lower course of the river Kisoand its tributaries. The land is rather low-lying and is therefore subject to the danger of inundation, but it is extremely fertile and is noted as a rice-producing district. Nagoya, the largest city in Japan next to the "three cities", is situated in this plain, while to the north lies the city of Gifu.

Mino-Owari Plain

The Kinai plain, the basin of the rivers Yamato and Yedo and the district of Kyōto and Ōsaka, may be considered as the cradle of our old civilisation and therefore the centre of our ancient history. It contains Kyōto and Ōsaka, the former widely renowned for its natural beauty and fine arts, and the latter for its commerce and manufactures.

Kinai Plain.

In the Sanyō and San-in districts there is, owing to the peculiar geographical formation of the land, no wide plain that deserves any special notice.

Plains in Shikoku.—In Shikoku the valley of the river Yoshino and the stretch of flat land lying on the northern sea-coast of Sanuki may be mentioned, though both are limited in extent. The soil is good, and the Yoshino plain is noted for the cultivation of the indigo-plant. The city of Tokushima is situated on the lower oourse ef the above-mentioned river.

Plains in Kyushu.—The Tsukushi plain, the valley of the river Chikugo, is the most important plain in Kyūshu, on account of its extent, its fertility, and its large production of grain. The Chikuzen plain which faces the Sea of Genkai is also noted for its agricultural products.

Tsukushi and Chikuzen Plains

Plains in Formosa.—In the western section of Formosa a narrow strip of flat alluvial land extends along the coast from north to south, and the section stretching from Shoka to Tainan is widely

noted for the production of rice, sugar cane, and other crops. Colonization is most actively going on in this section.

RIVERS.—Owing to the nature of our geographical formation and the consequent lack of any great distance from sea to sea, the rivers found in our country are comparatively short and rapid. However, some of them are comparatively long with wide alluvial basins, and supply great convenience in the way of transportation. They also form deltas at their mouths and hence give rise to prosperous cities. The case of Ōsaka at the lower course of the river Yodo is a typical example.

At the same time all those rivers are liable to inundations in times of heavy rainfalls, and to lay waste the surrounding districts. Damage inflicted by those inundations on life and property has frequently proved heavy.

RIVERS KITAKAMI AND ABUKUMA.—Honshu enjoys more than any other part of the country the benefits to be derived from rivers as means of supplying irrigation and facilities of transportation. Of the rivers that take their rise in the watershed running across this region and empty themselves into the Pacific Ocean, the Kitakami and the Abukuma, already mentioned, are found in the northern section, the former measuring about 79 *ri* in length and the latter about 77 *ri*. The Kitakami takes its rise in the back part of the province of Rikuchū, and sending off in Rikuzen a branch called the Oinami, empties itself at Ishinomaki into the Bay of Sendai. The Kitakami, flowing from north to south across a plain, is comparatively slow in current and supplies the people along its banks with the benefits of irrigation as well as of river traffic. The Abukuma takes its rise in Asahi-dake and Kinone-dake, Iwashiro, and flowing past the city of Fukushima, empties itself into the Pacific Ocean at the boundary of Rikuzen. For about 35 *ri* in its lower course the river admits of river traffic conducted by boats.

RIVER TONE.—The river Tone, otherwise called the Bandō Taro, rises in a hilly part of Kōzuke and runs for more than 70 *ri* through the extensive alluvial plain of Kwantō already described. Flowing southward it is joined by the river Watarase at Kurihashi, while at the town of Sekiyado it sends out a branch called the Yedogawa. Running further in a south-easterly direction, it enters

the ocean at the harbor of Chōshi. It is connected with several lagoons as Kasumiga-ura and Kita-ura, and is a great highway of communication and transportation between Tokyo and the provinces of Chiba, Ibaragi and Saitama. This advantage has been greatly increased by the junction of the Tone and the Yedo rivers by a canal measuring 2 *ri* in length and 20 yards in breadth. The work was completed in 1890.

River Sumida.—The river Sumida, though only 30 *ri* in length, gathers importance from the fact that in its lower course it flows through Tokyo, thereby supplying to the city a great benefit for its traffic.

River Fuji.—The Fuji (38 *ri*), which empties itself into the Gulf of Suruga, and the Oi (46 *ri*) and the Tenryū (60 *ri*) are a source more of damage than of benefit, owing to fact that they contain little water in ordinary times, and become suddenly swollen after rainfalls.

River Kiso.—The river Kiso (46 *ri*), which rises in Nishi Chikuma, a district of Shinano, much resembles the Tone as to its basin and its traffic importance. Its principal tributaries are the river Hida in the upper part of its course and the river Ibi in the lower part of its course, the river finally emptying itself into the Bay of Atsuta. The sediments brought down by it form deltas, and indeed the fine net-work into which the lower course is subdivided has no parallel in Japan. As may be seen by a reference to historical records the formation of deltas in this river is extremely rapid.

River Yodo.—The river Yodo is an outlet of Lake Biwa: the upper course is called Uji, and the lower part the Aji. It is a comparatively short river, extending only 20 *ri*, but from its situation it serves, together with the adjoining streams of Kitsu and Yamato, as a valuable factor in the prosperity for this district. The alluvial plain in which Ōsaka is situated was mainly formed by this river.

Kyoto Canal.—A short notice of the Kyoto canal which joins Lake Biwa with the river Kamo may be given here, it being the most important work of the kind recently undertaken in our country. It measures 6,107 *ken* with ramifications altogether measuring 1,620 *ken*. The canal serves for irrigation, as a highway for the

transportation of goods and produce, and also for generating electricity for the city of Kyoto. It was constructed in the year 1890 at a cost of 1,200,000 *yen*.

River Kii.—The river Kii, called also in some places the Yoshino and in others the Kiino, comes from Mount Odaigahara and empties itself into the sea in the vicinity of the city of Wakayama. It measures 47 *ri* in length, of which the lower 13 *ri* admit of being traversed by river craft.

Rivers in Sanyo and San-in Districts.—The river basin being extremely limited both in the Sanyō and San-in districts, owing to the existence of a mountain ridge along their border line, the rivers in this region are short. The Gonogawa, which comes from Aki and empties itself into the Sea of Japan in Iwami, is the longest of them, extending to the length of 50 *ri*, of which 20 *ri* are navigated by river craft.

Rivers Kuzuryu and Jintsu.—To continue the description of the rivers flowing into the Sea of Japan, there are in Hokuriku the rivers Kuzuryū, Jintsū and Imizu. The Kuzuryū rises at the boundary of Mino and, after passing through the city of Fukui, flows into the sea at the seaport town of Mikuni. The Jintsū takes its rise at Mount Kawakami, Hida, and flows into the Bay of Toyama *via* the city of Toyama. The other river, which rises at Mount Dainichi, Hida, also flows into the same bay. The three rivers afford great convenience in the matter of irrigation and partly admit of river traffic. The Imizu, the longest of the three, measures 50 *ri*.

River Shinano.—The river Shinano is the largest river in Honshu, its principal tributaries being the Sai-gawa and the Unuma-gawa. It comes from the eastern part of Shinano and, after flowing 100 *ri*, empties itself into the sea at the city of Niigata. Owing to the fact that a large number of small streams join it, the river is very wide; but it is shallow and only at the lower course north of Nagaoka it admits of being navigated by small river steamers.

River Onga-Gawa.—The Onga-gawa flowing to the east of the Shinano comes from Lake Inawashiro, Iwashiro. After running 57 *ri*, it empties itself into the sea at Matsuga-saki, Echigo. This current is more rapid than the other, and only at its lower course can it admit of river traffic. These two rivers while watering the exten-

sive plain of Echigo, supply it also with means of irrigation, carry its traffic, and yield it fish, so that they may properly be regarded as forming a vital factor in the prosperity of the province.

River Mogami.—The Mogami (62 *ri*) which takes its rise at Mount Danichi, Echigo, flows into the sea at the harbor of Sakata, after passing near the cities of Yonezawa and Yamagata and collecting a number of streams along the way. The alluvial plains in which the two cities are situated are the work of the river. However, the current is rapid, the Mogami being one of the three most rapid streams in our country, so that the river supplies only small convenience, if any at all, in the way of river traffic.

River Ishikari.—In Hokkaidō the existence of an elevation in the central part results in the sending of rivers in four directions, those flowing west being the Ishikari and the Teshiwo, to give only the principal streams, those flowing northward into the Sea of Okhotsk being the minor streams in Kitami, while the Kushiro and Tokachi rivers flow southeastward into the Pacific Ocean. Those in the provinces of Hidaka and Iburi run parallel to each other and southward into the ocean. The river Ishikari is the largest in the whole of Japan, and watering the wide plain of Ishikari, it extends over 167 *ri*. As a large number of small streams join this lordly river, the Ishikari may be considered as conducing to a very large extent to the fertility and prosperity of the western plains of Hokkaidō. For about 50 *ri* in its lower course the river is navigable by river steamers. It rises in Mount Ishikari and joins the sea at the harbor of the same name. The river Uryū is its principal tributary.

River Teshiwo.—The Teshiwo, taking its rise in Mount Teshiwo that stands on the boundary of Ishikari and Kitami, flows into the Sea of Japan after running northward for 74 *ri*. The current is less rapid than that of the Ishikari and is therefore more easily navigable.

River Kushiro.—The river Kushiro comes from Lake Kushiro situated in the northern part of the province of the same name. After flowing southward, it empties itself into the ocean at the sea-port town of Kushiro. The current is comparatively slow, and for 20 *ri* in its lower course it admits of being navigated by river steamers.

River Tokachi.—The river Tokachi rises on the mount of the same name and, after running southward for an aggregate distance of 53 *ri*, it flows into the sea, one branch at Tokachi and the other at Otsu, as the river divides into two branches before it reaches the sea. Although the basin of the river is wide and sufficiently fertile, it is not yet so extensively opened as the plain of Ishikari.

Rivers in Shikoku.—As the area is limited and a mountain range occupies the central portion of the island of Shikoku, the rivers are separated into those flowing northward and those flowing southward. All of them are short, except the river Yoshino, otherwise called the Shikoku Shiro. It measures 43 *ri*, and waters the plain of Awa. It supplies the means of irrigation and of river traffic, only it often overflows the banks, in the rainy season. The river takes its rise in the northern part of Tosa, and, flowing eastward, empties itself into the sea in the vicinity of the city of Tokushima.

River Chikugo.—In Kyūshu the mountain range of sedimentary formation and the two volcanic chains of Aso and Kirishima serve as starting points for rivers, and as the island generally abounds in dense forests which constantly feed the rivers, the volume of water in them is large and easily available for purposes of irrigation. However those that serve as highways of river traffic are few and far between, owing to the state of the current. The river Chikugo (35 *ri*) is the longest and rises in Mount Kokonoye, Bungo. After running in a north-easterly direction, it passes the city of Kurume and enters the sea of Ariyake at Yenotsu. This river waters the plain of Tsukushi, but is often unruly.

River Kuma.—The river Kuma, though only 25 *ri* in length, (or perhaps because of its shortness) is noted, together with the Fuji and the Mogami, as being the most rapid streams in Japan. However its lower course admits ef being navigated by river craft for about 6 *ri*. The river rises at the boundary of Hyūga, and, after crossing the province of Higo, it empties itself into the sea at Yatsushiro. The river Sendai, which takes its rise at the boundary of Hyūga and Higo, flows through the northern part of Satsuma, and then enters the sea. Its valley is fertile and the lower course admits of river traffic for 16 *ri*.

Rivers in Formosa.—As the island of Formosa measures more from north to south than from east to west, while the Gyoku-san range crosses through the centre, all the streams run from this watershed either to the east or to the west. They are all of them short. Some of the streams in the western half of the island are comparatively well supplied with water, but they are liable to be dried up in time of drought, while a heavy rainfall causes the streams to overflow their banks, and to send down volumes of sand to the mouths. The rivers of Formosa therefore present a peculiar feature of their own, compared with those in other places. Indeed the Chinese used to call them brooks and not rivers.

Of these streams the Tansui is the largest in Northern Formosa. It collects the greater part of the water coming down from the elevations in this section. The two streams of Taiko-kan and Shintsu coming from the south join the Tansui, while the Kelung stream comes from the vicinity of the city of Kelung. The Kelung is navigable by river steamers as far as Daitonei (Twatutia), situated about 5 *ri* from its mouth. The upper part of the Kelung partly admits of the use of native junks. The Tansui measures about 35 *ri* and empties itself into the Strait of Formosa. The Gê Tansui in the southern part of west Formosa is a stream that flows through the plain in the vicinity of Hōzan. Its basin being comparatively wide, it also serves as means of irrigation. It measures 32 *ri* and the part of Tōko lies at its mouth. There is a stream running across the north of Kagi, but it is of little use for river traffic. Eastern Formosa, being hilly and destitute of any wide plain, has no streams worth mentioning, except, perhaps, the Dakusui which empties itself into the sea at Karenko. Its valley is fertile and it also serves the purpose of irrigation.

LAKES AND PONDS.—The lakes and ponds found in our country may be classified into four kinds, according to origin; viz., tectonic, volcanic, choked up, and coastal. Lake Biwa is the most typical example of a lake formed by depression of tectonic origin. The second comprises those that occupy the craters of extinct volcanœa, while the third group consists of those that have been formed by the choking up of a river basin by certain epigenic

or hypogenic changes. The last group or lagoons are arms of sea enclosed by sand or shingle spit. The principal lakes belonging to the second group are Lake Ashi in Hakone (2,330), Lake Haruna (3,431) on Mount Haruna, Lake Chūzenji (4,340) at Nikkō, etc. Of the lakes, or more properly, ponds, swamps or lagoons belonging to the fourth group may be mentioned Kasumiga-ura, Kita-ura, Saruma-ko, Hachirōgota and others.

Lake Biwa.—Lake Biwa, which lies in the centre of the province of Omi, is the largest lake in Japan, measuring at its widest part 5 *ri* from east to west and 16 *ri* from north to south, with a circumference of 73 *ri*. Its area is 81 sq. *ri*. It is fed by a large nnmber of small streams flowing into it. Its outlet is the river Seta, which, under the name of the Yodogawa, flows into the Bay of Ōsaka. The cities of Ōtsu and Zêzê which stand on the southern shore of the lake with the minor towns of Shiozu and Kaitsu on the opposite coast constitute a centre of collection and distribution of goods that are carried over the lake between the districts in the vicinity of Kyoto and Ōsaka and the districts of Hokuriku and Mino and Owari. However, as a highway of transportation the lake has lost much of its former value consequent on the laying of railways in its vicinity. The lake is also noted for its fine scenery, and the "eight scenes of Ōmi," together with the beauties of the island of Chikubu-shima that stands in the lake, are widely celebrated.

Other Lakes.—Kasumiga-ura measures 36 *ri* in circumference and Kita-ura 15 *ri*. They are really lagoons. The towns lying on the shore of the first named lagoon are connected with Tokyo by steam service. Imba-numa is noted for its fishery and as serving purposes for irrigation to the neighboring fields. There is a scheme afoot for constructing a canal between it and the Bay of Tokyo.

COASTAL INDENTATIONS.—The importance of coastal indentations as a factor in the civilization and prosperity of a country gathers special force in connection with such a sea-girt country as Japan, for which those indentations may be considered as organs of respiration. It is exceedingly fortunate that our coast-line is comparatively well-indented, and extends for a considerable length.

Japan therefore may well be considered as enjoying a great natural gift in this respect and as being well qualified for the carrying on of active commerce with the outside world.

Ratio of Coast-line to Area.—The coast-line aggregates 4,432.84 *ri*, all the islands large and small constituting our country being taken into account. This compared to our whole area of 27,061.93 sq. *ri* corresponds to 1 *ri* of coast-line to every 3.64 sq. *ri*. If the ratio is taken for the larger islands alone, there is 1 *ri* of coast-line to every 4.79 sq. *ri*, the aggregate mileage of the coast-line and the area of those islands being 5,556.54 *ri* and 26,635.53 sq. *ri* respectively. The measurement for each of the larger islands is given below:—

Names of islands.	Circumference. *ri.*	Area per 1 *ri* coast line. *ri.*
Honshu	1,952.88	7.42
Shikoku	451.17	2.55
Kyūshu	861.18	2.68
Hokkaidō	583.33	8.66
Chishima (32 islands)	613.21	1.68
Sado	53.30	1.57
Oki	74.70	0.56
Awaji	38.70	0.94
Iki	35.44	0.24
Tsushima	186.27	0.23
Okinawa (55 islands)	315.06	0.50
Ogasawara (20 islands)	71.58	0.08
Formosa	299.72	7.52
The Pescadores	20.00	0.40
Total	5,556.54	4.79

It may be seen from this table that in length of coast-line as compared with area, Shikoku comes first, followed by Kyūshu, while the ratio is smallest in Hokkaidō, Formosa and Honshu, speaking about the principal divisions alone. This explains why the coasts of Shikoku and Kyūshu abound in good anchorages, and why in the islands of Hokkaidō and Formosa and on the Japan Sea coast of Honshu this advantage is less.

Principal Indentations and Harbors.—Brief descriptions of

some of the good anchorages that are found in the main island will be given next.

Beginning with the northern extremity of Honshu, there is the Gulf of Mutsu standing on the opposite side of the Tsugaru Strait as seen from Hakodate, Hokkaidō. This gulf is divided into two parts, the eastern section called the Bay of Nobechi and the western called the Bay of Aomori, the harbors of Nobechi and Aomori occupying the head of the bays of the respective names. Of the two Aomori is far more important and prosperous than the other. It contains over 28,000 inhabitants and has a regular steamship service, run by the Nippon Yūsen Kaisha, to and from the harbors of Muroran and Hakodate, while it is also the northern terminus of the Nippon Railway.

Aomori.

Between Aomori and along the east coast as far as Kinka-san, the coast is comparatively straight and possesses anchorages of only local importance. These are, beginning at the north, the port of Minato which is the terminus of the Shiriuchi Branch of the Nippon Railway; then Miyako and Kamaishi where the Yūsen Kaisha's steamers make a regular call. After passing Kinka-san we have the Bay of Ishinomaki, containing three anchorages, the one at the east being Oginohama, that in the middle, Ishinomaki, and that at the western extremity being Kamaishi, the last being connected by a branch line with the Nippon Railway. These three ports are centres of collection and distribution for goods coming from the wide plain of Kitakami or into it.

The only anchorage existing between the Ishinomaki Bay and Bōsō Peninsula is Chōshi, which lies at the mouth of the river Tone. Steamers regularly ply between it and the places situated along the Tone or on the shore of Kasumiga-ura and Kita-ura, while the Bōsō Railway connects the place with Tokyo. Moreover, as a line of the Nippon Railway passes Tsuchiura, a port on the shore of Kasumiga-ura, Chōshi and its vicinity enjoy great facilities of communication.

Choshi.

The Bay of Tokyo that lies on the western coast of the Bōsō Peninsula is the most important inlet of Japan, commercially and otherwise. It is bounded on the east by the peninsula of Awa, on the north by the

Bay of Tokyo.

shores of Kazusa and Shimōsa, while Tokyo and Yokohama with the places intervening between them constitute the western boundary. The peninsula of Misaki stands at the entrance of the bay. From the shore of Kazusa and Shimōsa as far as Tokyo, the water along the coast is comparatively shallow and cannot admit of the approach of a big vessel, but the inlets found south of Yokohama are in general good anchorages.

Yokohama.

Yokohama lies 18 miles to the south of Tokyo and is situated on the western shore of the Tokyo Bay It is a non-freezing port located at 35°26′ N. L. and 139°38. E. L. In respect to the aggregate tonnage of the ships that enter it and to the volume of foreign trade, Yokohama stands foremost in the list of our trading ports. Itis provided with all the necessary arrangements for overland and marine transportation and communications Water-works, parks, hotels, Japanese and foreign banks, firms and companies of all sorts and all the other provisions for comfort and public convenience and utility are complete, while the harbor is provided with piers and breakwaters and is thronged with ships coming from all parts of Europe and America. The water-works supply those ships with wholesome water at a very low charge. Yokohama contains at present over 193,000 inhabitants or 31,700 families.

Shimizu.

The Gulf of Sagami lies to the west of the Tokyo Bay, with the peninsula of Izu forming its eastern boundary and Cape Ommaye of Tōtōmi forming the western. There is at the western corner of the gulf the little harbor of Shimizu which supplies important shipping facilities to the vicinity. The fact that the Government Tōkaidō Railroad passes along the coast serves to increase considerably the means of transportation and communication. The shores of the gulf are noted for their fishery, while the narrow projection of Miho, which is seen to the best advantage from the harbor of Shimizu, is often referred to in poetry for its fine appearance.

The Sea of Ise.

Further westward there is no good anchorage as far as the Sea of Ise, which may be regarded as an extensive bay. It possesses along its coast quite a large number of ports. The ports of Handa and Taketoyo are

situated on the eastern coast of the peninsula of Chita which separates the two eastern inlets of the Sea of Ise, namely the Bay of Atsumi and the Bay of Chita, from the sea proper. The most inland inlet of the sea is called the Bay of Atsuta and into this bay the river Kiso empties itself, as do also a large number of other streams, the result being the formation of several deltas. Atsuta is a prosperous little port situated at no great distance from the city of Nagoya. Its prosperity will be largely increased when the harbor works now going on shall have been completed. On the western shores of the sea are the ports of Kuwana, Yokkaichi, and Tsu, of which Yokkaichi, being a special export port, is the most important. It is connected by a regular steamship service with Yokohama. The harbor of Toba in the province of Shima is situated at the western mouth of the sea. Its waters are very deep.

Bay of Atsuta.

The Bay of Ōsaka which lies on the western side of the peninsula of Kii, is bounded on the west by the island of Awaji, and is encircled by the three provinces of Settsu, Kawachi, and Izumi. The city of Ōsaka, the "Manchester of Japan," surpasses all other cities in the Empire for the prosperity of its trades and manufactures, while the city of Sakai that lies a short distance off may claim the name of "Japanese Sheffield," on account of its cutlery industry.

Osaka.

Kobe is situated on the north-eastern shore of the bay mentioned above, its exact location being 35°37′ N. L. and 135°24′ E. L. It is the western terminus of the Government Tōkaidō Railroad and the starting point of the Sanyō Railroad, so that both in respect of land and marine communications, it is about as well provided as Yokohama, its only rival in the matter of foreign trade. In fact, so far as the volume of the import trade is concerned, Kobe even surpasses Yokohama, though in the gross volume of the trade, however, it still comes below the other city. Kobe has a better anchorage, however, than Yokohama, its water being deep and permitting large ships to come near the shore where contrivances are provided for the loading and unloading of goods. The principal imports are raw cotton, iron ware, sugar,

Kobe.

cotton yarns, and rice, while rice, matches, fancy matting and tea constitute the principal exports. It may be added that all the conveniences of business and communication, as also those of comfort are as complete in Kobe as in Yokohama.

The Inland Sea (Murotsu, Ushimado, Takamatsu, Marugame Tadotsu, Kurê, Ujina, Shimonoseki, etc.).—A narrow trip of sea extending westward from Kobe is the celebrated Inland Sea. It is bounded on the north by the Sanyō-dō districts and on the south by the island of Awaji and by Shikoku. Besides abounding in inlets and harbors, and dotted by innumerable small islands, many of them covered by pine trees, this sea is generally tranquil all the year round. It unfolds new scenes and new wonders as the steame, threads its way between isles and round the bare or wooded curves, so that a voyage through this far-famed sheet of water is delightful beyond description. The sea is subdivided into four sections' according to the divisions of the coast of Sanyō-dō, and

Harima-oki. the first of these, the "Harima-oki," is continuous as far as the Bay of Ōsaka, and washes the shores of Harima and Bizen. This section possesses the ports of Murotsu and Ushimado on the Sanyō-dō side and Takamatsu on the

Bingo-oki. opposite side. The second section called "Bingo-oki" washes Bitchū and Bingo of Sanyō-dō and Sanuki and Iyo of Shikoku. Tamashima and Sasaoka of Bitchū; Tomotsu, Onomichi, and Mihara of Bingo; Marugamê and Tadotsu of Sanuki, and Imaharu of Iyo are the ports lying on both sides

Akino-umi. of this section. The third section called "Akino-umi" washes the coast of Aki on the one hand and that of the north-western coast of Iyo on the other. It is distinguished from the other sections by a larger number of small islands, or which Itsukushima, popularly known as one of the "Three Sights of Japan," is the most noteworthy. On the Aki side lie the naval port of Kurê and the port of Ujina, while on the opposite coast are found Mitsugahama and Nagahama. The last

Suwo-nada. section at the western extremity of the Inland Sea is "Suwo-nada," with Murotsu, Tokuyama and Mitajiri, and Shimonoseki as its ports, while the port of Moji in Buzen, Kyūshu, is situated just at the mouth of the sea. Of

Shimonoseki. these both from a historical and a commercial point of view, Shimonoseki is the most important.

On the coast of Shikoku there are only two indentations worth mentioning, one being the Bay of Tosa situated on the Pacific side of the island and the other the port of Uwajima on the Inland Sea side. The latter supplies an anchorage of local importance.

The Bay of Tosa, Uwajima.

Turning to the northern or the Japan Sea coast of Honshu, the condition of the coast is found to be considerably inferior so far as anchorages are concerned, the coast being already described. Only on the coast of Hōki, Tango, Wakasa, Noto and Ugo are indentations of any importance to be found; while, owing to the prevalence of high waves in winter, voyage along that coast in that season is risky. The inlet on the coast of Hōki is called the Bay of Mi-o. At the bottom of this inlet is the harbor of Sakayê, to the south is another harbor, that of Yonago. These are the only important anchorages in Sanin-dō.

The Bay of Mi-o (Sakaye, Yonago).

The section of the sea bounded on one side by the projection of Echizen and on the other by that of Tango is the Bay of Wakasa. On the western side lie the port of Miyazu and the admiralty port of Maizuru, while to the east, round Cape Tateiwa, is situated the Bay of Tsuruga with the harbor of the same name This is the most important shipping centre in Hokuriku, and, connected by railroad with the provinces in Kinai and Tōkaidō, it is a flourishing place for the collection and distribution of goods coming from the northern sea.

The Bay of Wakasa, (Miyazu, Maizuru, Tsuruga.)

The eastern coast of the peninsula of Noto is, in contrast to the western, rich in indentations, of which the harbor of Nanao facing to the south, another harbor, that of Fushiki, may be mentioned. Besides being a regular port of call for the Yūsen Kaisha's steamers, Nanao is also connected with Vladivostock by a regular steamship service, and with the provinces of Kinai and Tōkaidō by a railroad. Fushiki, with the cities of Takaoka and Toyama situated not far off, is an important shipping centre for this district.

Nanao, Fushiki.

The coast of Echigo has the harbor of Naoyetsu on the south and the harbor of Niigata on the north, the two cities being connected by a railroad, while Naoyetsu is also connected with Tokyo by a Government line. Niigata is one of the five open ports first opened to foreign trade. It is situated at 35°39″ N.L. and 139°3′ E. L. But the defective anchorage of the harbor and the remoteness of the district have prevented Niigata from ever becoming a market for foreign trade, and its customs returns are eclipsed by those of other ports opened much later. Owing, however, to the vast output of cereals produced in the fertile plains of the province, Niigata enjoys great prosperity so far as the home trade is concerned.

Niigata.

Proceeding further northward along the coast, there are at the mouth of the river Mogami the harbor of Sakata, and a little further to the north of it the harbor of Nojiro, the latter of which is connected by railroad with Aomori.

Sakata.

There are comparatively few indentations in Hokkaidō, owing to the nature of its coast-line; in fact there are only three, namely Volcanic Bay in the southern extremity, Ishikari Bay on the western coast and Nemuro Bay on the eastern.

Hakodate, one of the five open ports, is situated at 41°45′ N. L. and 140°43′ E. L. The basin of the harbor covers about 1 *ri* 6 *cho* north and south and 21 *cho* east and west, and, as the water is deep and sheltered on all sides by land, Hakodate supplies an excellent anchorage. The prosperity of the place increased apace with the progress of colonization in the island for whose products it serves as the most important outlet. The existence of water-works and the abundant supply, at cheap rates, of excellent Hokkaidō coal make this harbor an excellent calling place for steamers. However, owing to its remoteness from the centre of business and political activity, the volume of foreign trade here is not yet so high as in other places. The chief export goods are marine products, sulphur, etc., while iron ware, salted fish, etc. constitute the principal import goods. With the increased utilization of the Siberian Railroad as a medium of communication between Europe and Asia, Hakodate is sure to become an important calling place for steamers. At the end of 1898, the city contained 78,040 inhabitants.

Hakodate.

Otaru, situated in the Ishikari Bay, contained over 70,000 inhabitants at the end of 1901, and being the most important outlet for the marine, agricultural and mining products produced in the plains of Ishikari and Teshiwo whose coast supplies an excellent fishing ground for herring, its advance has been striking. It is one of the newly opened ports and its harbor-works will be completed a few years hence.

Otaru.

Nemuro and the harbor of Akkeshi on the coast of Kushiro, are, though regular calling places of the Yūsen Kaisha's steamers, comparatively insignificant commercially on account of their remote situation. Muroran, situated at the eastern entrance of Volcanic Bay, is an excellent anchorage, and, together with Otaru, exports a large quantity of coal. It is connected with Sapporo and Otaru by a railroad, while there is a regular steamship service between it and Hakodate. Travellers from Honshu who take the way of Aomori in going to Sapporo or Otaru generally go to Muroran *via* Hakodate.

Nemuro.

Muroran.

The coast-line of Kyūshu is comparatively straight in the south-eastern part, but on the other hand the north-western part is well indented. Moji, standing opposite Shimonoseki, a narrow arm of the sea separating, is the most flourishing port in the latter district. Its proximity to the principal coal-mines in Kyūshu and the vast export of coal from it has brought about this marked prosperity of the port. It contains over 36,000 inhabitants. The means of communication and transportation are very complete, the Sanyō Railroad running between Shimonoseki and Kobe on the one hand, and the Kyūshu Railroad starting on the other from this port of Moji. In the year 1899 it was included in the list of open ports, and already its volume of trade threatens to eclipse that of Nagasaki. The export of coal alone amounts to over 3,600,000 tons in a year. The little port of Wakamatsu situated close to it has suddenly sprung into importance owing to the establishment of the Government Iron Foundry in its neighborhood.

Moji.

Wakamatsu.

On the northern coast of Kyūshu are found Hakata in Chikuzen, Karatsu in Hizen, and Izuhara in Tsushima, all of them ports of local importance. The admiralty port of Sasebo and the

Sasebo. ancient treaty port of Nagasaki are found round the western extremity of Hizen, while Kuchinotsu lies at the southern end of the peninsula of Shimabara.

Nagasaki. Nagasaki is situated at 52°45' N. L. and 130°29' E. L. It was opened to foreign commerce no less than 332 years ago when a treaty of commerce were concluded for the first time with the Portuguese. From that time till the opening of the country, Nagasaki was the only common ground of trade carried on between Japan and the outside world. Owing, however, to the transfer of the seat of commercial activity to Yokohama and Kobe, the prosperity of Nagasaki as a trading port has not of late made such a marked advance as that of other places. Still it is a regular calling port for steamers destined to or coming from the ports on the continent of Asia, the Philippines, Australia and Europe, and being provided with railroad connections, it enjoys great facilities in the matter of both maritime and overland transportation. The basin measures 28 *chō* wide. It is sheltered on all sides by hills, and the water in the harbor is deep. All provisions for the convenience of ships, such as water-works, a plentiful supply of coal, and a dockyard (the celebrated Mitsubishi Yard) are complete. In the year 1900 the volume of trade aggregated over 22 million *yen*, the principal goods imported being raw cotton, sugar, kerosene, etc., and the principal export goods being coal, rice, marine products, etc.

Kagoshima. At the extremity of the promontory of Udo on the western coast of Higo is situated Misumi, and at the mouth of the river Kuma the harbor of Yatsushiro, the latter being the terminus of the Kyūshu Railroad. At the mouth of the river Chikugo is situated Wakatsu and a little further off Omuda, both of which export the coal of the Miike mine and also other local products. At the southern extremity of Satsuma is found the harbor of Bonotsu, a regular station for shipping connection between Kagoshima and Okinawa. The Gulf of Kagoshima lies at the southern extremity of Kyūshu and contains at its head the harbor of Kagoshima, the most important anchorage in southern Kyūshu. The gulf covers 20 *ri* north and south and 3 to 8 *ri* east and west. The water is deep and forms a good anchorage,

but the means of communication with the rest of the island are not so complete as they will be shortly, when the Government Kagoshima Railroad shall have been completed, to be connected with the Kyūshu Railroad at Yatsushiro *via* Hitoyoshi. This line is now partly open to traffic.

In contrast to the north-western coast, the eastern coast of Kyūshu is devoid of good anchorages. The ports of Ōita and Beppu situated at the bottom of Beppu Bay, and the port of Saganoseki situated a little further off to the south-east, and finally the port of Saiki situated still further to the south may be mentioned as anchorages of local importance. They are connected by a regular steamship service with Ōsaka, Kobe, Moji, etc. The only anchorages to be mentiond on the coast of Hyūga are Hosojima on the north and Yunotsu on the south, both being regular calling stations of the Ōsaka Shōsen Kaisha's steamers.

Beppu Bay.

Owing to the comparatively straight, unbroken outline of the coast of Formosa, there are only two harbors, Tansui and Kelung, on the northeastern coast, and two others, Anping and Takao, on the south. The former two lose much of their importance as anchorages owing to the fact that they are exposed to strong north-easterly winds in winter, while the two southern ports are subject to the similar disadvantage of being exposed to south-westerly winds in summer.

Tansui is situated about 5 *ri* to the north of Taihoku and at the mouth of the river Tansui. As there are, however, a number of sand-bars in this harbor, steamers of deep draught cannot enter the basin unless at high-tide. The tea produced in the island is mostly shipped from Tansui harbor, which is therefore crowded with Chinese junks and steamers in the height of the tea season. Tansui is separated from Nagasaki by 640 miles and from Fuchow on the opposite coast of China by 137 miles. It contains about 10,000 inhabitants.

Tansui.

Kelung, about 9 *ri* to the north of Taihoku and 25 miles by sea from Tansui, is the most important shipping station between the island and Japan proper. It is enclosed on three sides by hills, and the Formosan Government has started the work

Kelung.

of sheltering the exposed side. Coal constitutes the principal item of export, the mineral being produced in the vicinity. The commercial activity of the city is however eclipsed by that of Daitotei (Twatutia) and Manko (Manka), in the suburbs of the city. The distance from Nagasaki is 637 miles, from Shanghai 776 miles, from Amoy 235 miles, and from Fuchow 150 miles. The city contains about 10,000 inhabitants.

Anping, Takao.

Anping which ranks next to Tansui in the volume of trade, is situated about 1 *ri* to the west of Tainan. Steamers have to anchor at a distance of about 1 *ri* from the mouth of the harbor, and they are often cut off from all communications with the land by the strong trade-wind that blows during the summer. A canal connects the harbor with Tainan. The staple export goods are camphor and sugar. Takao about 10 *ri* to the south of Tainan and about 3 *ri* to the south-west of Hōnzan, is the only harbor in Formosa which is sheltered from the trade-winds. The depth of the basin measures 5 to 7 fathoms. Sugar is the staple export, but the commercial prosperity of the place shows rather a retrogression than a advance.

So-o.

Turning to the eastern coast, there is only one harbor, that of So-ō in the northern part, though it is shallow and is poor as an anchorage. The rest of the coast-line ends abruptly and supplies no good shelter for ships.

IV. GEOLOGICAL FORMATION.

General Remarks.—In general outline Japan may be considered to consist of three arcs, one constituted by the stretch of islands extending from Formosa to Kyūshu, the second by Japan proper extending from Kyūshu to Hokkaidō proper, and the third by the Kurile group. The islands composing Japan are apparently a part of the continental system of Asia, but the geological formation is even more complicated than that of the continent. For further particulars on this subject the reader is referred to the section of Mining.

V. CLIMATE.

OCEANIC CURRENTS.—Owing to the fact that Japan is situated both in the temperate and tropical zones, the climate is on the whole mild and salutary. It is further influenced by the seas that girdle the country, the nature of the prevailing winds, etc.

BLACK CURRENT.—Oceanic currents first demand our attention. Of these the "Kuroshiwo" or Black Current is the most important, for it is owing to its proximity that the climate of Japan, especially of the Pacific districts, is considerably moderated. It is so called from its color, which is deep indigo in fine weather and ashy pale on cloudy days. The Black Current takes its rise near the Equator, being produced by the Pacific Trade Wind. It is at the vicinity of the island of Bashi, the northern-most of the Philippine group, and at about 21° N. L. and 135° E. L. that the current, that has been flowing westward as far as that place, turns north-ward, and thus begins to constitute a Japan current. After running along the eastern coast of Formosa it is divided into a number of currents at about 23° N. L. and 126° E. L. The main current runs E. N. E. and along the southern coast of Kyūshu and Shikoku. Its velocity is extraordinary at this point and the speed with which it flows between the islands of Mikura and Hachijō, of the Izu group of islands, is as much as 40 knots per hour. Proceeding northwards, it turns in a north-easterly direction, to be again divided into two streams at about 38° N. L. The main current gradually bends more and more eastward, and finally reaches the vicinity of 160° E. L. On the other hand the branch current proceeds northward and finally reaches the Aleutian archipelago and the Behring Sea, and is known by the name of the Kamchatka Current. Ships sailing from Yokohama to North America follow the route of this Black Current.

The branch current that is separated from the main current at 28° N. L. passes into the Sea of Japan *via* the arm of the sea separating Kyūshu and Tsushima. From about the central section of Honshu, this current comes closer to the shore of the island, but on proceeding to 41° N. L. and 138° E. L. it is divided into two branches, one of which turns eastward through the Strait of Tsugaru

and disappears near the eastern entrance of the strait, while the other proceeds northward and reaches the western coast of Hokkaidō, finally disappearing in the Sea of Okhotsk.

Other Currents.—There are, besides the above, two colder currents, the "Oyashiwo" and the Okhotsk Current, the former of which originates in the vicinity of the Peninsula of Kamchatka, and the other near the mouth of the Amur river.

"Oyashiwo" Current.

The Oyashiwo flows downward along the eastern coast of Hokkaidō and Honshu, and reaches as far as the vicinity of Cape Inuboye. This current is of a dark muddy color and can be distinguished at once from the Black Current. Its temperature is 5 or 8 degrees lower than that of the other.

Okhotsk Current.

The Okhotsk Current is divided into two streams, one called the Saghalien Current and the other the Liman Current. The former current is first driven northward by the force of the water coming out of the Amur, then courses round the northern tip of Saghalien, to flow down southward along its eastern coast, and finally to divide itself into two streams at about 45° N. L., one of which streams, after passing between the islands of Shikotan and Etrup, joins the Oyashiwo. The other proceeds southward, and enters the Sea of Japan, to disappear there owing to its coming into contact with the warm current coming northward.

Saghalien Current.

Liman Current.

The Liman Current traverses the eastern coast of the continent of Asia. One branch of it disappears in the vicinity of Vladivostock, while the other proceeds southward through the centre of the Sea of Japan and comes as far south as the vicinity of Hongkong *via* the Korean Straits, the Yellow Sea and the Eastern Sea of China. It is owing to the proximity of this cold current that the districts of China bordering on the two seas have comparatively severe winters.

TEMPERATURE.—Generally stated, the districts bordering on the Pacific differ very much in temperature from those facing the Sea of Japan. In the former the temperature is more moderate than in the other, and while it is warmer in winter it is cooler in

summer. On the other hand, the districts along the Sea of Japan have rigorous winters and hot summers. The marked contrast in the general temperature of the two regions may be explained by the fact that, while the Pacific shores are under the influence of the warm current coming from the sea and are protected by mountain ranges from the winds coming from the north-west, the districts along the Sea of Japan are directly exposed to the cold north-western winds coming from the wide plain of Siberia.

Hokkaido.

Both from its high latitude and also owing to the influence of the cold wind from Siberia, the temperature of Hokkaidō is low. In winter, and especially in the month of January, the thermometer is generally below zero, and in summer it reaches 21° C. in warmer districts.

Kyushu and Shikoku.

In Kyūshu and Shikoku, on the other hand, the temperature stands high owing to their latitude, the influence of the warm air coming from the sea, and also to the proximity of the Black Current. The average temperature in summer often exceeds 27° and in winter it rarely falls below 4°.

Formosa.

Formosa is warmer, and is in fact the hottest place in Japan. Southern Formosa is situated, indeed, in the tropical zone, and the temperature there does not fall below 15° even in winter, while it records 28° on an average in summer. The two extremes of temperature in Formosa are 35.6° and 4.8°

Comparison with other places.

On comparing the temperature of Japan with that of European and American places situated in the same latitude, it is discovered that in winter our temperature is lower while the opposite is the case in summer. This remark does not, however, hold good with regard to the comparison between Japan and places on the continent of Asia. In fact the exact reverse is the truth, the summer being warmer and the winter being colder on the continent than in the case of Japan. To give a few examples, Kagoshima is situated nearly in the same latitude as Shanghai, but while its average temperature in July is about 2° below that of the other, it is over 3° higher in January. Akita and Peking are also in the same latitude, but the latter has an average yearly temperature

of 11.8°, that of 0.46 in January, and of 26.2° in July, as against the corresponding figures of 10.3°, 2.5°, and 24.2° at Akita. In a similar way Fusan is about 2° higher in its yearly average than Numazu, but, while in the latter the average in January is 4.9° it is 0.17 in the other. The contrast is more pronounced between Vladivostock and Sapporo situated nearly in the same latitude. The averages in summer do not differ much from each other, but in winter Supporo is about 8° higher than the other.

This characteristic climatic feature at all those continental places is of course due to the absence of the moderating influence of the sea.

But when a comparison is made between Japan and North America, the temperature of the former is found to be colder in winter and warmer in summer than that of the latter. For instance though the temperature of Niigata and San Francisco, situated nearly in the same latitude, is about the same in spring and autumn, the temperature of Niigata is lower by about 8° in winter though higher by about 15° in summer. Sōya and Vancouver have nearly the same temperature in summer and autumn, but during winter Sōya is colder by 8° to 9° than the other. This comparatively lower temperature in Japan is due to the prevalence in winter of cold winds coming from Siberia.

ATMOSPHERIC PRESSURE.—The average atmospheric pressure throughout Japan is 760 mm., the pressure being, as is generally the case, higher in winter and lower in summer. The difference between the winter pressure and the summer pressure decreases as we go from the east to the west, and while in Okinawa and Formosa it is about 10 mm., it falls to about 5 in eastern Kyūshu, and down even to 4 in Hokkaidō. The usual position of the centres of low and high pressure varies according to the seasons, partly owing to the geographical position of the country. In summer the centre of low atmospheric pressure lies in Korea and Siberia, while the corresponding centre of high pressure is found in the Pacific Ocean east of Japan. In the other three seasons the positions of low and high pressure centres are reversed, the former being in Korea and Siberia and the latter in Honshu or Hokkaidō or in the sea to the north-east of these islands.

PREVAILING WINDS.—The general condition of the atmospheric pressure being such, the winds prevailing in Japan naturally change according to places and seasons. During winter the prevailing wind is from the north-west to be superseded in spring by a wind from the south-west which in turn is replaced in summer by a south-westerly wind. This gradually shifts to the south-east, then to the north-east, and finally resumes in winter the original north-westerly direction. The prevalence of a north-westerly wind in winter is caused by the coming to the south-east of a current of air caused by the high pressure in northern Asia and the lower pressure existing in the Pacific. On the other hand the prevalence of a southerly wind in summer is the effect of the monsoon which originates in the China Sea and the Indian Ocean to neutralize the low pressure caused in summer on the continent. This wind, which bears moisture from the sea, causes rain as it reaches the land, and the heavy rain in the month of June is the effect of this wind.

The coming of a cold wind from the north-west in winter from Korea and Siberia has already been referred to, and the effect of this wind is most severely felt along the shores of Uzen and Ugo and the Hokuriku route which all lie in the direct path of the wind.

About the month of August or September, when the monsoon is about to die away to be superseded by a colder wind, storms very frequently occur, taking the form of what are generally called typhoons.

The storms that occur in Japan may be divided into four kinds, according to their places of origin. One originates to the east of the Philippines or in the China Sea and reaches Honshu *via* the Sea of Japan, the Yellow Sea, and Korea.

Storms.

The second, also originating to the east of the Philippines, reaches Kyūshu *via* the Eastern Sea, but without entering the China Sea. Then at times the storms come direct from the vicinity of the Philippines to the southern districts of Japan, while another kind of storm comes from southern Siberia, to sweep across Hokkaidō. The second and third kinds are the most common and also the severest.

These storms often attain a velocity of 17 miles an hour and, as they reach 32° N. L. and rage not unfrequently for over 48 hours at a time, they inflict severe damage on crops and property. As the storms occur generally in the flowering season of the earlier or later varieties of rice, the "210th day" or the "220th day" from the beginning of spring according to the lunar calender, it not infrequently happens that the crop is seriously affected.

In general the winds in Japan are stronger in spring and winter and weaker in the other seasons.

HUMIDITY.—Surrounded as it is by the sea, the degree of humidity is higher in Japan than in continental countries. The average record is 60/100 on an average. The atmosphere along the coast of Hokkaidō contains a larger quantity of moisture than that in any other part of the country. In the vicinity of Cape Erimo the yearly average is 87, while it reaches as high as 95 in July. On the other hand the interior of the island is unusually dry. In Honshu the districts facing the Sea of Japan, that is Uzen and Ugo and Hokuriku, have the highest record, the year's average being over 80. Formosa too has a similarly high record, not falling below 80° all the year round. In the Pescadores even 89 is reached in June.

On the other hand the districts bordering on the Inland Sea, both in Honshu and Shikoku, have the lowest record, which often falls below 60.

RAINFALLS.—Owing to the prevalence of moist winds coming from the sea and the existence of mountain ranges to condense that moisture, the rain-gauge records in Japan a height far above the average in other places.

In Honshu the districts bordering on the Sea of Japan have the highest record which generally exceeds 2,000 mm. in a year, while Kanazawa has as much as 2,500. The north-eastern shore of Kii, Kōchi in Shikoku, Miyazaki and Kagoshima in Kyūshu, also have a high record. But Oshima in Kagoshima has the highest record, reaching as much as 3,300 mm. in a year.

On the other hand Sōya in Hokkaidō has a rainfall of only 700 to 800 in a year, both on account of its latitude and of the comparative scarcity of evaporation from the sea. The districts

bordering on the Inland Sea have also the lowest record, owing to the fact that the moisture coming both from the Pacific and the Sea of Japan is intercepted by the ranges of Shikoku on the one hand and by those running across the boundary between Sanyō and San-in on the other.

In general the rainiest season in Japan is, as already mentioned, the month of June. However this heavy rainfall at this particular season is very important for the cultivation of rice, this being the period of planting.

The fall of snow is heaviest in the Hokuriku districts, where even along the shores it is 3 to 4 *shaku* deep, while in the recesses of the hills the accumulations exceed even 10 or 20 *shaku* in depth. In Shikoku and Kyūshu snowfalls occur very rarely, and in the Pacific coast districts of Honshu they are also very rare. In Tokyo snow does not fall more than four or five times in a year, and does not exceed 5 or 6 *sun* in depth.

CHAPTER II—Population.

History—Number—Density—Urban and Rural Population—Increase of Urban and Rural Population—Households—Social Divisions—The Sexes—Classification as to Age—Marriages—Birth-rate—Death-rate—Normal Increase—Emigration.

I. HISTORY RELATING TO CENSUS RETURNS.

BEFORE THE RESTORATION.—Census returns were made in Japan from ancient times, as it is recorded in authentic records that in the 12th year of the reign of the Emperor Sujin (86 B.C.) an Imperial Rescript was issued ordering the compilation of census returns with the object of levying taxes in kind and imposing labor for public service. Similar returns were also made during the reigns of the Emperors Yūryaku, Seinei, Kensō, and Kinmei (457–571 A. D.). It was, however in the time of the Emperor Kōtoku (645–654 A. D.) that the census business was first arranged in a systematic manner. This Emperor ordered in the year 645 A. D. that regular census registers should be compiled, and that the compilation should be renewed in future every six years. This six year method was also provided in the Taihō code of laws, so called because the first systematic codification of laws was undertaken in the era of Taihō (701–703 A. D.). At any rate it was evidently during the reign of the Emperor Kōtoku that the census returns were for the first time regularly compiled. It is to be regretted that, owing to the remoteness of the period in question, no further particulars can be obtained about the returns of that time. The returns compiled during the reign of the Empress Shōtoku (724–748 A. D.) by the priest Gyoki in the course of his extended tour throughout the country and also those made by the priest Shuzen during the Eikan era (983–984 A. D.) of the Emperor Enyū, are also lost, for whatever record

First Census.

remains of those compilations gives only meagre information on the entire population of the country at these two periods. Even when the returns were entire they could at best give barely the approximate number of the inhabitants, inasmuch as that number was roughly calculated, evidently, from the number of villages, families, and adults whose services were available for public work.

Census during the Tokugawa Regency.

With the advent of the Tokugawa Regency and especially after peace and order had been perfectly restored and social institutions became properly arranged, the Regency, actuated by various considerations financial and otherwise, began to perceive the necessity of inaugurating a proper system of census returns. The consequence was the issue of an order at various times ordering the compilation of census returns for the whole country. The returns took several different shapes, such as returns on arable land, returns on religion, and returns on personal identification. The returns made in the year 1744 A. D. put the entire population at 26,152,450. The figures fell to 25,917,830 in the returns compiled seven years later. The figures made out in 1751 were 26,061,830, while those in 1828 were over 27,200,000.

AFTER THE RESTORATION.—With the rehabilitation of the Imperial régime the work of compiling census returns was placed under the control of the *ci-devant* Department of Civil Affairs which attended to it with greater precision and energy, as may be seen in the following preamble of Notification No. 170 issued in April of 1871 by the then Daijōkan, now corresponding to the Cabinet, by which notification thirty three rules were provided for making census returns. The preamble stated :—"It is of the utmost importance in the administration affairs of a country to keep accurate account of the number of its families and individuals, for, unless this number is accurately known, the state can hardly attend to its primary duty of extending protection to its subjects. The subjects will also, on their part, enjoy peace and prosperity and can pursue their business unmolested only when they are under the protection of their government, so that should it ever happen that their domicile is absent from the official record, owing either to their own negligence

Census Notification.

or evasion or from an oversight on the part of the government officials, those people will be practically non-existent in the eyes of the government and will therefore be excluded from the enjoyment of the protection universally extended by the government to its people.

"Lack of uniformity in the local administration from about the time of the Middle Ages has, among other irregularities for which it is accountable, reduced the business of keeping personal registers to a state of disorder; people were allowed to remove their abodes without giving notice to the authorities, and even to evade with impunity the duty of registering themselves in the census record. Accustomed for ages to these irregular practices, people are prone to regard the duty of registration with perfect indifference. It was in view of this circumstance that the rules of keeping census records throughout the country have now been provided, and that the local authorities and the people are hereby enjoined to duly regard the points herein set forth and to carefully attend to them."

The Government of the time drew, in that way, the attention both of the local authorities and of the people to the great importance of the census, and warned them against faults of omission and commission in the entries of the census registers.

Control of Census Business.

With the abolition in that year of the Department of Civil Affairs, the census business was transferred to the Census Record Bureau of the Department of Finance, to be again transferred in January of 1874 to the control of the Home Office which subsequently took charge of personal registration as well as of census-taking, till in 1898, when the Law of Personal Registration was put in force, all matters relating to registration were entrusted to the Department of Justice and those connected with census-taking to the Statistical Bureau of the Cabinet.

II. NUMBER OF POPULATION.

PROGRESS DURING THE 28 YEARS (1872–1899).—In surveying the movement of the population in Japan during the 28 years beginning with the year 1872 and ending 1899, it is found that

the population that stood at 33 million souls approximately from 1872 to 1875 inclusive, grew in 1876 to 34 millions approximately; then to 35 millions in 1879, to 36 millions in 1881, and to over 37 millions in 1883, all in round numbers. The figures for 1889 were over 40 millions, while the corresponding figures in 1897, that is eight years later, were 43 millions approximately. In the year 1899 the number stood at 44,260,604 precisely, an increase of 11,149,779 on that of 1872, the yearly rate of increase corresponding to 412,955 on an average. Reserving all particulars about the rate of increase and so forth to be dealt with in special paragraphs, the yearly gross figures are given as follows:—

REGISTERED POPULATION OF JAPAN.

Year.	Males.	Females.	Total.
1872	16,796,158	16,314,667	33,110,825
1873	16,891,729	16,408,946	33,300,675
1874	17,050,521	16,575,157	33,625,678
1875	17,250,420	16,747,029	33,997,449
1876	17,419,785	16,918,619	34,338,404
1877	No returns.	No returns.	No returns.
1878	No returns.	No returns.	No returns.
1879	18,140,822	17,627,762	35,768,584
1880	18,208,890	17,720,170	35,929,060
1881	18,423,274	17,935,720	36,358,994
1882	18,598,998	18,101,120	36,700,118
1883	18,755,242	18,262,060	37,017,302
1884	18,954,770	18,496,994	37,451,764
1885	19,157,877	18,711,110	37,868,987
1886	19,451,491	19,055,686	38,508,177
1887	19,731,732	19,337,959	39,069,691
1888	20,008,445	19,598,789	39,607,234
1889	20,246,336	19,825,684	40,072,020
1890	20,431,097	20,022,364	40,453,461
1891	20,563,416	20,155,261	40,718,677
1892	20,752,366	20,337,574	41,089,940
1893	20,906,464	20,481,848	41,388,313
1894	21,122,899	21,690,316	41,813,215
1895	21,345,750	20,924,870	42,270,620
1896	21,561,023	21,147,241	42,708,264
1897	21,823,651	21,405,212	43,228,863
1898	22,073,896	21,689,257	43,763,153
1899	22,329,925	21,930,681	44,260,604

Note:—The returns for the year 1872 were made on January 29th, those for the 1873 to 1885 years on January 1st, and those from the 1886 to the 1889 years on December 31st. There is a difference of two between the total aggregate of the male and female population for the 1889 year, because there were two cases of death in which the sex of the party who died was unknown.

The population of the island of Formosa and of the group of Pescadores will be described in the special chapter devoted to Formosa.

III. DENSITY OF POPULATION.

RELATIVE DENSITY.—The total area of the Empire (Formosa excluded) being 24,794.36 sq. *ri*, and the actual population, at the end of 1898, 45,402,359, the density of the population per sq. *ri* amounts to 1,831. Taking the relative rate of density in the six main divisions of the country, it is found that the Western section of Honshu with 2,945 comes at the head of the list, followed by 2,880 in the Middle section of Honshu, 2,542 in Shikoku, 2,464 in Kyūshu, 1,309 in the Northern section of Honshu. Hokkaidō with only 141 comes at the bottom of the list.

In Honshu.—The greater density in the Western section of Honshu is attributable to the fact that it contains the districts of Kinai where in one place or another the successive Emperors that ascended the Throne fixed their capital during a period of no less than 2,527 years, and where therefore are found many flourishing cities and towns. The presence of such large cities as Tokyo, Yokohama, and Nagoya accounts for the density of the Middle section. In short the presence of 1,399 to 2,945 people per sq. *ri* in the five sections above enumerated is primarily due to the facilities of communication and to the prosperity of trade and industry in those regions.

In Hokkaido.—The scarcity of population in Hokkaidō is due to its remoteness and severe climate, and especially to the fact that comparatively a short space of time has elapsed since the work of colonization was started there. The soil being, however, well adapted for agriculture and stock-breeding while the rivers and shores are rich in aquarin wealth, Hokkaidō will become, at no distant date, far more densely populated, receiving as it does,

at the present moment from the rest of the country from 40,000 to 60,000 per annum.

The following table shows the relative density of population in each section.

Section.	Area (sq. *ri.*)	Actual Pop.	Pop. per sq. *ri.*
Middle Honshu	6,145.99	17,708,223	2,880
Northern Honshu	5,071.82	6,639.372	1,309
Western Honshu	3,472.72	10,226,539	2,945
Shikoku	1,180 67	3,000,794	2,542
Kyūshu	2,827.80	6,967 897	2,464
Hokkaidō	6,095.36	859,534	141
Total	24 794.36	45,402,359	1,831

Note:—The Middle section comprises the 17 perfectures of Tokyo, Kanagawa, Saitama, Chiba, Ibaragi, Tochigi, Gumma, Nagano, Yamanashi, Shizuoka, Aichi, Miye, Gifu, Shiga, Fukui, Ishikawa, Toyama; the Northern section camprises the 7 prefectures of Niigata, Fukushima, Miyagi, Yamagata, Akita, Iwate, Aomori; the Western section consists of Kyoto, Ōsaka, Nara, Wakayama, Hyogo, Okayama, Hiroshima, Yamaguchi, Shimane, Tottori; Shikoku comprises Tokushima, Kagawa, Ehime and Kōchi; Kyūshu comprises Nagasaki, Saga, Fukuoka, Kumamoto, Ōita, Miyazaki, Kagoshima, and Okinawa; Hokkaidō covers all the districts under its jurisdiction. This classification holds good for all the tables to be given hereafter.

Densely Inhabited Prefectures.—To enumerate those prefectures that contain over 3,000 inhabitants per sq. *ri*, we have:—

Prefecture	Area. sq. *ri.*	Actual population.	Population per. sq. *ri.*
Tokyo	125.80	2,101,102	16,702
Ōsaka	115.72	1,600,923	13,834
Kagawo	113.50	694,280	6,117
Kanagawa	155.67	926,884	5,954
Aichi	312.78	1,639,611	5,242
Fukuoka	317.81	1,425,625	4,486
Saitama	265.99	1,175,697	4,420
Chiba	326.15	1,275,376	3,910
Saga	160.08	618,679	3,865
Nagasaki	235.15	902,455	5,838
Kyoto	296.55	997,488	3,364
Hyogo	556.68	1,717,634	3,085

The prefectures mentioned above are the most densely populated prefectures in the country, the density in the rest ranging from 1,000 to 3,000, with the exception of Miyazaki which contains 953 and Iwate which has 799. Hokkaidō, as described above, contains only 141, being the most thinly populated of any.

IV. URBAN AND RURAL POPULATION.

Relative Density.— Regarding a place where over 3,000 inhabitants form one community as an urban section, the urban population at the end of 1898 aggregated 10,702,232, the remaining 34,700,127 residing in rural sections. According to the foregoing, out of every 100 the urban population amounted to 24 and the rural population to 76. The particulars are given below.

Section.	Urban.	Rural.	Percentage.	
			Urban.	Rural.
Middle	5,007,323	12,700,900	28	72
Northern	1,381,301	5,258,071	21	79
Western	2,709,596	7,516,943	26	74
Shikoku	418,720	2,582,074	14	86
Kyūshu	944,910	6,022,987	14	86
Hokkaidō	240,382	619,152	28	72
Total	10,720,232	34,700,127	24	76

Note :—The urban population consists of the inhabitants of the *Shi* (cities) established after the institution of the Local Civic Corporation System and those of the *Cho* (towns) containing not less than 3,000 inhabitants. The two urban districts of Naha and Shuri in Okinawa and the districts of Hakkodate, Sapporo, Otaru, Esashi and Fukuyama, all of which contained more than 3,000, have also been included in the total. The population other than urban was all included in the rural population.

Movement of the two Populations.—The population of cities and towns containing not less than 10,000 aggregated 5,500,000 in 1890. In 1894 it grew to over 6,080,000 and in the year 1898 to over 7,130,000. Then that of rural districts which stood at 35,000,000 approximately in 1890, grew to over 36,000,000 in 1893, and to over 38,000,600 in 1898. The movement of the two

sections of the population during the 9 years ended 1898 is shown below :—

Year.	Urban districts of over 10,000 Pop.		Rural districts of less than 10,000 Pop.	
	Actual Pop.	Increase over pre. year per 10,000 Pop.	Actual Pop.	Increase over per. year per 10,000 Pop.
1890	5,504,059	——	35,464,776	——
1891	5,657,493	27.88	35,611,239	4.13
1892	5,768,228	19.57	35,928,619	8 91
1893	5,927,699	27.65	36,133,277	5 70
1894	6,086,310	26.76	36,344,675	5 85
1895	6,210,801	20.45	36,837,425	13.56
1896	6,409,736	32 03	37,090,097	6.86
1897	6,772 042	56.52	37,206,453	3 14
1898	7,136,691	53.85	38,265,668	28.47

Relative Increase.—To review the movement of the two classes of population, the rate of increase of the urban population is far more marked than that of the others, for while the rate in 1891 compared with that of the preceding year was 27.88 per 1,000 in the urban districts, it was only 4.13 in the rural. In 1895 the rate in urban districts was 20.45 and in rural districts 13.56, and lastly in 1898 the rate was 53.85 and 28.47 in the respective districts. On the whole the rate during the 9 years under review was about 33 in the urban districts against 10 in the rural, and this marked increase in the urban population is evidently attributable to the rise of trade and industry in cities and the consequent emigration of the rural population to the urban districts.

V. INCREASE OF URBAN POPULATION.

The number of cities and towns containing not less than 10,000 inhabitants was 122 in 1887. That number increased to 152 in 1892 and to 162 in 1898. The marked increase in the number in 1898 was due to the amalgamation of villages with towns or cities on the occasion of the institution of the Local Civic Corpora-

tion System, as also to the settlement of the people from the villages in the urban districts. The movement of the urban districts as to population from 1886 to 1898 is as follows:—

Year.	Over 10,000	Over 20,000	Over 50,000	Over 100,000	Over 200,000	Over 300,000	Over 400,000	Over 500,000	Total.
1886	69	36	8	1	1	1	0	1	117
1887	69	40	7	3	1	0	1	1	122
1892	89	45	12	3	0	1	1	1	153
1897	88	52	14	3	1	1	0	2	161
1898	84	57	13	3	2	1	0	2	162

The foregoing urban districts being distributed among the main local divisions, the figures at the end of 1898 stood thus:—

Section.	Over 10,000	Over 20,000	Over 50,000	Over 100,000	Over 200,000	Over 300,000	Over 400,000	Over 500,000	Total.
Middle ...	45	26	2	1	1	0	0	1	76
Northern ...	15	11	2	0	0	0	0	0	28
Western ...	11	9	3	1	0	1	0	1	27
Shikoku ...	5	4	1	0	1	0	0	0	10
Kyūshu ...	8	6	3	1	0	0	0	0	18
Hokkaidō ...	0	1	2	1	0	0	0	0	3
Total ...	84	57	13	3	2	1	0	2	162

Next the population of those urban districts containing not less than 50,000 inhabitants at the end of 1898 was as follows:—

ACTUAL POPULATION.

Tokyo	1,440,121	Ōsaka	821,235
Kyoto	353,139	Nagoya	244,145
Kobe	215,780	Yokohama	193,762
Hiroshima	122,306	Nagasaki	107,422
Kanazawa	83,662	Sendai	83,325
Hakodate	78,040	Fukuoka	66,190
Wakayama	63,667	Tokushima	91,591
Kumamoto	61,463	Toyama	59,558
Okayama	58,025	Otaru	56,961
Kagoshima	53,481	Niigata	53,366
Sakai	50,203		

At the end of 1898 the number of rural communities was 13,230, distributed as follows :—

Middle Section	4,821
Northern	2,163
Western	2,982
Shikoku	781
Kyūshu	1,920
Hokkaidō	603
Total	13,270

Note :—The rural communities represented above comprise those "Son" (villages) in the Local Civic Corporation System, and also those "Cho" (towns) that contained less than 3,000, inhabitants, besides the rural communities of Okinawa known by the special name of "Makiri."

VI. RELATIVE NUMBER OF PEOPLE IN HOUSEHOLD.

AVERAGE PER FAMILY.—The number of households at the end of 1898 was 8,182,017 against the population of 45,402,359, the number of people per household therefore amounting to 5.55. The relative rate in the local divisions was as follows :—

Section.	Actual No. of households.	Actual Pop.	Number per household.
Middle...	3,160,800	17,708,223	5.60
Northern	1,016,131	6,639,372	6.53
Western	1,994,348	10,226,539	5.13
Shikoku	570,246	3,000,794	5.26
Kyūshu	1,266,697	6,967,897	5.51
Hokkaidō	173,795	859,534	4.95
Total	8,182,017	45,402,359	5.55

Note :—In the above and in the following two tables, the number of households does not coincide with the number of heads of families because there are sometimes more than one household under single head.

AVERAGE IN URBAN DISTRICTS.—The number of people per household in the urban districts was 4.99, the actual number of

households and of the population being 2,145,316 and 10,702,232 respectively :—

Section.	Actual No. of household.	Actual No. of Pop.	People per household.
Middle...	1,021,723	5,007,323	4.90
Northern	237,729	1,381 301	5.81
Western	581,863	2,709,596	4.66
Shikoku	89,021	418,720	4.70
Kyūshu	168,811	944,910	5.21
Hokkaidō	46,169	240,382	4.99
Total	2,145,316	10,702,232	4.99

Average in Rural Districts.—The number of people in each household in the rural districts is 5.75, the actual number of households and of population being 6,036,701 and 34,700,127 respectively :—

Section.	Actual No. of household.	Actual Pop.	Pop. per household.
Middle...	2,139,077	12,700,900	5.94
Northern	778,402	5,258,071	6.75
Western	1,412,485	7,516,943	5.32
Shikoku	481,225	2,582,074	5.37
Kyūshu	1,097,886	6,022,987	5.49
Hokkaidō	127,626	619,152	4.85
Total	6,037.701	34,700,127	5.75

It will be seen from the foregoing tables that the average number of people per household in the urban districts is 4.99 as against 5.75 in the rural, and that while the number per household is larger in the rural districts than the urban, in the Middle, Northern and Western Sections of Honshu and in Shikoku, the exact reverse is the case in Kyūshu and Hokkaidō.

VII. SOCIAL CLASSES.

Four Divisions.—Our people are divided into four social classes, namely the members of the Imperial family, Peers,

"Shizoku" and "Heimin." Of the four classes the first being the descendants of one or other of the Emperors and therefore of Princes or Princesses of the Blood, stand at the head of all the classes. The Peers consists of those courtiers who have inherited one important post or another at the court, of the former feudal lords, and lastly of those whose distinguished services have obtained for them a patent of nobility. The Peers are of five grades, namely Prince, Marquis, Count, Viscount and Baron, and they enjoy special privileges both politically and socially. The Shizoku are the samurai of oldern days, but at present this title merely serves to indicate the former profession of the holder's family with no privilege, such as existed formerly, attached to it. The rest are Heimin or commoners, whose standing does not differ at all from that of the Shizoku.

Imperial family.

Peers.

Shizoku.

Heimin.

The numerical strength of the three classes excepting the highest from 1879 to 1898 is as follow:—

Year.	Peers.		Shizoku.		Heimin.	
	Heads of Families.	Households.	Heads of Families.	Households.	Heads of Families.	Households.
1879	464	2,661	404,389	1,428,968	7,032,893	26,409,592
1882	487	2,717	425,881	1,505,943	7,258 608	37,501,915
1887	588	2,228	425,960	1,528,709	7,629,966	29,475,125
1892	600	3,253	430·135	1,584,171	7,841,550	31,224,647
1897	695	3,828	437,556	1 651,578	8,043,187	33,087,554
1898	706	3,845	439,387	1,666,311	8,180,112	33,468,054

VIII. THE SEXES.

Average Ratio.—In comparing the number of males and females, the former are found to exceed the latter, the ratio of males to females ranging between 101.77 and 102.96 to 100 during the 28 years ended 1899.

Year.	Males.	Females.	No. of Males per 100 Females.
1872	16,796,158	16,314,667	102.95
1876	17,419,785	16,918,619	102.96
1883	18,598,998	18,101,120	102.75
1888	19,731,732	19,337,959	102.04
1892	20,752,366	20,337,574	102.04
1892	21,823,651	21,405,212	101.95
1897	22,073,896	21,689,257	101.77
1899	22,329,925	21,930,681	101.82

This excess of males over females holds good in the stages of childhood (below 15 years) and adult life (16 to 65 years), but in the last stage of old age (66 years and over) the relation is reversed. These relations are demonstrated in the following table.

	No. of Males to every 100 Females.		
Year.	Childhood.	Adult.	Old age.
1884	102.19	104.49	84.00
1887	102.27	103.89	82.33
1892	102.18	103.88	82.89
1897	102.41	103.57	83.53
1898	102.29	103.43	82.35

Age Demarkation of the Sexes.—In examining the demarkation line as to the age when the number of females begins to exceed that of males, it is found that, according to the returns from 1886 to 1898, this demarkation occurs at the age of 58 to 61, as follows:—

Year.	Females are in excess at the age of	Males are in excess at the age of
1886	58 and over	57 and over
1887	59 „ „	59 „ „
1888	60 „ „	59 „ „
1889	61 „ „	60 „ „
1890	58 „ „	57 „ „
1891	59 „ „	58 „ „
1892	58 „ „	57 „ „
1893	59 „ „	58 „ „
1894	60 „ „	59 „ „
1895	60 „ „	59 „ „
1896	60 „ „	59 „ „
1897	61 „ „	60 „ „
1898	61 „ „	60 „ „

IX. POPULATION AS CLASSIFIED BY AGE.

In classifying the population by age there are many points to be considered, such as ages of efficient labor, non-efficient labor, conscription service, voting, school attendance, marriage, procreation, longevity, etc., but here only the three subjects of ages of efficient labor and of non-efficient labor, of procreation and of conscription service shall be dealt with.

Ages of Efficient Labor and Non-efficient Labor. —In general our people cannot engage in self-supporting work until they reach the age of about 15, so that the years below 15 must be regarded as age of non-efficient labor, the years between 16 and 65 as ages of efficient labor, and the years above 66 as ages of non-efficient labor. The population of the efficient and non-efficient labor as based on the foregoing standard is shown below :—

Year.	Below 15.	16 to 65.	above 66.
1884	11,842,565	23,458,278	2,142,236
1887	13,087,582	23,826,408	2,152,303
1892	13,702,107	25,120,236	2,265,046
1897	14,195,521	26 602,214	2,429,097
1898	14,366,923	26,989,196	2,404,700

In the foregoing three classes of population shown in per centage, those of non-efficient labor on account of childhood constitute in general 33 out of every 100, those of similar non-efficiency on account of declining age 6, and those of efficient labor the remaining 61. In other words, of every 100 people 61 give support to others and 39 receive support from others. These relations are demonstrated as follows :—

Year.	Below 15 years.	16 to 65 years.	Above 66 years.	Total.
1884	31	63	6	100
1887	33	61	6	100
1892	33	61	6	100
1897	33	61	6	100
1898	33	12	5	100

Age of Procreation.—Women are not allowed in our Civil Code to marry until they reach full 15 years of age, and hence the age of procreation may be considered as beginning at that age. The years at which sterility commences are not uniform according to persons, the period arriving before 40 in some and after 50 in others. However, the average may be taken as 45 years, so that the period between 15 and 45 years may be regarded as the period of procreation.

According to that standard, the child-bearing portion and the non-procreative portion amount to 44 and 56 respectively, as shown below :—

Year.	Women between 15 and 45.	Women below 15 or above 46.	Pro-creative.	Non-Procreative.
1887	8,498,070	10,838,583	44	56
1892	8,986,358	11,350,172	44	56
1897	9.517,051	11,887,385	44	56
1898	9,661,749	12,026,561	45	55

Ages of Conscription Service.—The male subjects of the Empire are eligible for military service from full 17 to full 40 years. At the end of 1898 year there were 8,034,098 males of those ages, corresponding to 36 out of every 100 males, as below :—

Year.	Population available for service.	Per 100. males.
1887	7,220,932	36.60
1892	7,477,507	36.03
1897	7,914,181	36.26
1898	8,034,098	36.40

X. MARRIAGE.

Marriage Rules.—Before giving any data about marriage a brief description of the legislation enacted in connection with marriage may be given here. The marriage age as provided by the Civil Code, begins at full 17 years with males and full 15 with females, and in making the marriage contract the consent of parents or of those who legally represent them is necessary.

However, this consent is despensed with in the case of those males who have reached the full age of 30 or in that of females who have reached 25. The same Code prohibits polygamy under pain of criminal punishment, the system of monogamy having been legally established more than 10 centuries ago. Women are similarly forbidden to make any polyandrous contracts.

NUMBER OF MARRIAGE CONTRACTS.—The number of marriage contracts during the ten years ending 1900, was 372,102 which corresponds to 8.82 per every 10,000 people, this rate being shown in the following table:—

Year.	Number of marriage contracts.	Per 100 people.
1883	337,456	9.10
1887	334,149	8.55
1892	349,489	8.51
1893	358,389	8.66
1894	361,319	8.64
1895	365,633	8.65
1896	501,777	11.75
1897	365,207	8.45
1898	471,298	10.77
1899	297,117	6.71

Note:—The number of contracts for 1899 covers only those that were reported during that year, those that were reported after that year being excluded. This remark applies also to the tables of birth and death to be mentioned subsequently.

NUMBER OF MARRIED COUPLES.—The number of married couples subsequent to 1886 are as follows:—

	No. of married couples.	Per. 10,000 people.
At the end of 1886	7,289,001	189.29
„ „ 1887	7,346,670	188.04
„ „ 1892	7,561,900	184.03
„ „ 1897	7,892,073	182.56
„ „ 1898	7,979,383	182.34

As shown in the table, 182.34 to 189.29 out of every 1,000 people are married couples so that in every 1,000 of the population

there are 364.68 to 378.58 married people, the rest being single. This rate is a fairly good record compared with the data in other countries, demonstrating to some extent the easy condition of living in Japan and the domestic stability that obtains there.

XI. BIRTH-RATE.

Average Rate.—During the ten years ended 1899 inclusive, the average births numbered 1,243,014 or 2.95 per 100 people. The birth-rate was larger for males, their birth during the ten years referred to being 104.67 per 100 females. Below is shown a table showing the number of births and the ratio of male and female births from 1872 to 1899.

Year.	Males.	Females.	Total.	Birth-rate per 100 Pop.	Males per 100 Females.
1872	290,836	278,198	569,034	1.71	104.54
1877	455,689	434,829	890,518	2.55	104.80
1882	474,189	448,526	922,715	2.49	105.72
1887	542,043	516,094	1,058,137	2.71	105.03
1892	617,234	589,800	1,207,034	2.94	104.65
1893	602,322	576,106	1,178,428	2.85	104.55
1894	620,844	588,139	1,208,983	2.89	105.56
1895	638,895	607,532	1,246,427	2·95	105.16
1896	651,468	630,710	1,282,178	3.00	103·29
1897	683,941	650,184	1,334,125	5.09	105.19
1898	696,131	673,491	1,369,622	3.13	103.36
1899	705,017	666,120	1,371,191	3.10	105.85

XII. DEATH-RATE.

Average Rate.—During the ten years ended 1899 the average rate of mortality was 880,589 which corresponds to 2.09 per 100 people. The rate of mortality is greater in males than in females,

that of the former being 106.05 per 100 of the latter, as shown below :—

Year.	Males.	Females.	Total.	Mortality per 100 Pop.	Mortality of males per 100 females.
1872	208,092	197,312	405,404	1.22	105.46
1877	324,732	295,574	620,306	1.78	109.86
1882	346,112	322,230	668,342	1.81	107.41
1887	386,132	367,324	753,456	1.93	105.12
1892	452,136	434,852	886,988	2.16	104.82
1893	479,052	458,589	*937,644	2.27	104.46
1894	432,820	407,947	*840,768	2.01	106.10
1895	448,873	403,549	852,422	2.02	111.23
1896	469,485	443,336	*912,822	2.14	105.90
1897	452,383	424,454	876,837	2.03	106.58
1898	459,298	435,204	*894,503	2.04	105.54
1899	474,043	453,002	*927,046	2.09	104.64

Note :—The figures marked with an asterick (*) represent persons whose sex was unknown.

Average according to Age.

Though on the whole the rate of mortality is greater in males than in females, this is not uniformly the case for males of all ages, as the mortality of females is found to be greater than that of males according to age. For instance the data obtained for 1899 show that, though the rate of mortality is greater for males at the age of not less than ten years, the relative proportion is reversed between 11 and 40 years, to be again restored to the former proportion between 41 and 70. Finally, over 70 the rate of mortality shows a marked decrease for males.

Ages.	Mortality of males per 100 of females.	Ages.	Mortality of males per 100 of females.
1 to 5	113.03	51 to 60	132.22
1 to 10	104.05	61 to 70	119.58
11 to 15	86.34	71 to 80	95.77
16 to 20	84.50	81 to 90	71.49
21 to 30	87.11	91 to 100	51.76
31 to 40	88.68	above 101	25.00
41 to 50	119.99		

XIII. NORMAL INCREASE OF POPULATION.

GENERAL DATA.—Though an approximate idea of the normal increase of population may be obtained by comparing the birth-rates with the death-rates, this can by no means be accurate, inasmuch as there happen omissions in the report of births or deaths, or omissions to register and subsequent corrections. In fact the rate of increase of the population as statistically recorded is much greater than the difference between the birth-rates and the rate of mortality. The rate of yearly increase from 1872 to 1899 and the rate of increase per 100 population are recorded in the following table.

Year.	Increase.	Increase per 100 Pop.
Jan. 29, 1872 to Jan. 1, 1873	189,850	0.57
Jan. 1, 1873 to Jan. 1, 1874	325,003	0.98
Jan. 1, 1874 to Jan. 1, 1875	371,771	1.11
Jan. 1, 1875 to Jan. 1, 1876	340,955	1.00
Jan. 1, 1876 to Jan. 1, 1879	1,430,180	4.16
Jan. 1, 1879 to Jan. 1, 1880	160,476	0.45
Jan. 1, 1880 to Jan. 1, 1881	429,934	1.20
Jan. 1, 1881 to Jan. 1, 1882	341,124	0.94
Jan. 1, 1882 to Jan. 1, 1883	317,184	0.86
Jan. 1, 1883 to Jan. 1, 1884	434,462	1.17
Jan. 1, 1884 to Jan. 1, 1885	417,222	1.11
Jan. 1, 1885 to Jan. 1, 1886	282,230	0.75
Jan. 1, 1886 to end of 1886	355,960	0.93
End of 1886 to end of 1887	562,514	1.46
End of 1887 to end of 1888	537,543	1.38
End of 1888 to end of 1889	464,786	1.17
End of 1889 to end of 1890	381,441	0.95
End of 1890 to end of 1891	265,216	0.66
End of 1891 to end of 1892	371,263	0.91
End of 1892 to end of 1893	298.373	0.73
End of 1893 to end of 1894	424,902	1.03
End of 1894 to end of 1895	457,405	1.09
End of 1895 to end of 1896	437,644	1.04
End of 1896 to end of 1897	520,599	1.22
End of 1867 to end of 1898	534,290	1.24
End of 1898 to end of 1899	497,451	1.14

As may be seen from the foregoing table, the rate of increase is

extremely irregular, being in some years less than ½, in others 1 and in still others 1 and a fraction. However in 1879, 1885, 1886, 1891 and 1894 when the rate stood very low, various causes, such as the spread of epidemic diseases, the rise in the market price of commodities, etc. prevented the progress of the population. The average rate of increase during the preceding 28 years amounted to over 1.04 per 100 of the population.

Average.

In the relative rate of increase between urban and rural population, that of the former is, as already explained, considerably higher than that of the latter. This increase is however due to an abnormal cause which is operative in all civilized countries, that is to say, the emigration of villagers to towns and cities. As to the normal increase, the rate is higher in rural districts, because there the birth-rate is higher and the rate of mortality lower than the same rates in the urban districts.

During the ten years ending 1897 inclusive, the birth-rate in cities possessing an actual population of not less than 25,000 was 2.30 and the rate of mortality 2.18, per 100 of the population, the increase of population corresponding therefore to 0.12. For the whole country the birth-rate was 2.92 and the rate of mortality 2.07, the balance in favor of increase being 0.85. Thus the rate of increase in cities is less by 0.73 than that for the whole country, as shown below:—

Rate in Cities.

	For the whole country.			For cities of over 25,000 Pop.		
Year.	Births per 100 Pop.	Deaths per 100 Pop.	Balance between births and deaths.	Births per 100 Pop.	Deaths per 100 Pop.	Balance between births and deaths.
1888 ...	2.96	1.90	1.06	2.40	1.07	0.33
1889 ...	3.02	2.02	1.00	2.38	2.15	0.23
1890 ...	2.83	2.04	0.79	2.49	2.37	0.12
1891 ...	2.67	2.10	0.57	2.13	2.28	0.15
1892 ...	2.94	2.16	0.78	2.32	2.37	0.05
1893 ...	2.85	2.27	0.58	2.23	2.19	0.04
1894 ...	2.89	2.01	0.88	2.29	2.00	0.29
1895 ...	2.95	2.02	0.93	2.23	2.19	0.04
1896 ...	3.00	2.14	0.86	2.86	2.02	0.14
1897 ...	3.09	2.03	1.06	2.41	2.14	0.27
Average.	2.92	2.07	0.85	2.30	2.18	0.12

XIV. EMIGRATION AND IMMIGRATION.

EMIGRATION AT HOME.—Apart from the emigration of country people to towns and cities, the emigration to Hokkaidō from the rest of Japan proper deserves special notice, tens of thousand of settlers proceeding thither every year since the work of colonizing that northern island was started soon after the advent of the rehabilitated Imperial régime. This migratory movement is shown in the following table :—

Hokkaido.

Year.	Males.	Females.	Total.
1872	—	—	13,655
1877	—	—	2,539
1882	2,903	2,636	5,539
1887	4,278	3,509	7,787
1892	24,289	18,419	42,708
1897	36,457	27,893	64,350
1898	37,271	26,358	63,629
1899	25,182	20,212	45,334
1900	26,475	21,643	48,118

According to the returns of the settlers for 1900, 25,927 were engaged in farming, 4,620 in fishery, 1,743 in manufacture, 3,385 in trade and the rest in miscellaneous occupations.

EMIGRATION ABROAD.—The emigration to foreign countries is comparatively insignificant, for those that go abroad generally stay there for a limited period, on official duty, for the purpose of prosecuting their studies, with the object of carrying on some business, or as laborers. This remark may also be applied to foreigners in Japan, so that in the present paragraph a few words may be said of the Japanese staying abroad and of the foreigners staying in our country.

JAPANESE STAYING ABROAD.—With increase of intercourse with foreign countries, the number of Japanese going abroad is steadily advancing, so that while in 1889 the number was only 18,688 it grew to 58,785 in the year 1897, to be still further increased to 123,971 in 1900. A review of the preceding 12 years shows the following figures :—

Year.	Males.	Females.	Total.
1889	13,815	4,873	18,688
1890	17,519	6,031	23,950
1891	23,681	8,465	32,146
1892	29,615	9,388	39,003
1893	31,147	10,055	41,202
1894	31,632	9,958	41,590
1895	34,332	11,945	46,277
1896	40,348	13,994	54,342
1897	43,707	15,078	58,785
1898	53,114	17,687	70,801
1899	76,633	22,406	99,039
1900	98,985	24,986	123,971

According to the returns for the last year in the above table, the majority of those temporary emigrants went to the United States of America and its colonies especially Hawaii, also to Korea, England and its colonies, Russia and its colonies, China, France, Peru and Germany. During the same year those temporary emigrants were employed thus :—

Country.	On official duty.	For prosecuting studies.	Engaged in trade.	Others.	Total.
United States and colonies ...	52	554	2,851	86,689	90,146
England and colonies	133	40	512	7,530	8,215
Russia and colonies	15	65	286	3,587	3,953
Holland	4	2	—	—	6
France and colonies	44	36	18	799	897
Portugal and colonies	—	1	—	9	10
Germany	33	162	5	14	214
Belgium	10	5	5	1	21
Italy	7	—	—	6	13
Spain	2	—	—	—	2
Austria	8	13	10	5	36
Peru	1	—	—	693	694
Brazil	7	—	—	2	9
Mexico	6	3	4	32	45
Siam	7	3	29	39	78
Korea	538	16	9,669	5,606	15,829
China	202	40	1,931	1,630	3,803
Total	1,063	940	15,320	106,642	123,971

FOREIGNERS IN JAPAN.—The number of foreigners coming to Japan has been on the increase since the treaty was concluded with the United States of America in 1854 A. D. In 1873 the number stood at 4,190, increased to 4,236 in 1877, to 6,335 in 1882, 7,560 in 1887, and so on, as detailed below.

Year.		Year.	
1889	9,062	1895	8,246
1890	9,707	1896	9,238
1891	9,550	1897	10,531
1892	9,803	1898	11,589
1893	9,633	1899	11,684
1894	5,875	1900	12,664

In the number of foreigners in 1900 as classified according to nationality, the Chinese came at the top of the list, followed by the English, Americans, Germans and French, and so on, as shown in the following table:—

Subjects of	Males.	Females.	Total.
United States of America	833	629	1,462
Hawaii (U. S. A.)	2	—	2
England	1,260	784	2,044
British Dominion in Canada	15	29	44
Russia	88	89	177
Holland	42	23	65
France	313	145	458
Portugal	112	61	173
Germany	395	145	540
Belgium	15	7	22
Italy	31	12	43
Spain	30	7	37
Austria-Hungary	51	27	78
Denmark	42	18	60
Switzerland	56	32	88
Sweden and Norway	36	14	50
Greece	10	2	12
Turkey	14	6	20
Peru	1	—	1
Chili	2	—	2
Roumania	5	3	8
Argentine Confederation	—	2	2
Philippines (U. S. A.)	1	—	1

Subjects of	Males.	Females.	Total.
India (England)	7	—	7
Korea	184	9	193
China	5,394	1,496	6,896
Unknown	44	13	57
Total	8,983	3,553	12,536

The total of this table does not coincide with the other one, because 128 persons forming the diplomatic and consular staff were excluded from the table.

CHAPTER III—Administrative System.

Rights of Sovereignty—Legislature and Legislative Organs—Executive and Executive Organs—Justice and Judicial Organs (with paragraphs on the Codes.)

I. RIGHTS OF SOVEREIGNTY.

Administrative System in Olden Days.—Our Empire of Japan is ruled over by an Imperial House of unbroken lineage from the remotest antiquity, for though during the period of more than 2,000 years that has elapsed since the founding of the Empire, the nation has undergone various changes, this glorious dynasty has always remained unchanged.

The Military Ascendency.—The administrative system was very simple in ancient times. There was no distinct line of demarcation drawn between military and civil affairs, and the whole nation was considered as one big army with the Emperor over it. It was during the "Middle Ages" and after the adoption of the Chinese system of administration, or more especially that of the then dynasty of Tung, that for the first time military and civil affairs were distinctly separated. Soon, however, the warrior classes began little by little to acquire the supreme authority, and to thrust the Court into the background. For more than seven centuries the real sovereignty of the country was vested in one or other of the Regencies that appeared in succession, till, in 1867, the Regency of Tokugawa was made to surrender the power to its rightful and original possesser, and thus the Imperial régime was firmly re-established. One thing that must be strictly kept in mind in this connexion is the fact that, in theory at least, the Emperors remained even during those periods of military ascendency, the supreme heads of the country and were always regarded as sacred and inviolable.

The Imperial Prerogative.—The restoration of the Imperial Government was at once followed by many striking changes in the administrative system of the country, as may be inferred from the fact that Japan promulgated her constitution 22 years after and soon began to blossom forth as a constitutional monarchy. This great change naturally led to the sovereign rights of the Emperor in the three domains of legislative, juridical and executive affairs, being strictly defined in the manner given below. The Emperor's prerogative now consists in the

1. Right of convoking, opening, closing or proroguing the Imperial Diet, and of dissolving the House of Representatives.
2. Right of issuing, in case some urgent necessity demands, the exercise of that right when the Imperial Diet is not sitting, Imperial Ordinances which take the place of regularly enacted laws.
3. Right of issuing or of causing to be issued the Ordinances necessary for the carrying out of the laws or for the maintenance of public peace and order, and for the promotion of the welfare of the subjects.
4. Right of determining, excepting those cases especially provided for in the Constitution or in other laws, the organization of the different branches of the administration, the salaries of all civil and military officers, and of appointing and dismissing the same.
5. Right of taking the supreme command of, and determining the organization and peace standing of, the Army and the Navy.
6. Right of declaring war, making peace and concluding treaties.
7. Right of proclaiming a state of siege.
8. Right of conferring titles of nobility, rank, orders and other marks of honor.
9. Right of declaring an amnesty, as well as the right of pardon, commutation of punishments, and rehabilitation.

II. LEGISLATURE AND LEGISLATIVE ORGANS.

CODIFICATION IN EARLY DAYS.—As provided in Art. VII. of the Imperial Constitution, the right of legislation belongs to the Emperor who exercises that right with the approbation of the Imperial Diet.

To briefly review the history of our legislature, the first thing that demands attention is the compilation of a code of laws by Prince Shōtoku during the reign of the Empress Shōmu (724–'48 A. D.) and the compilation of the celebrated Taiho code during the reign of the Emperor Mommu (697–718). Though considered very important in those days, these legislative measures were necessarily very simple, at least when they are viewed from the standpoint of to-day, so that their value is mainly historical.

During the periods of military ascendency and the prevalence of feudalism, the legislature was in an almost chaotic condition and it was not until after the Restoration that this fundamental organ of the administration was brought to a state of some perfection.

THE FIRST LEGISLATIVE WORK AFTER THE RESTORATION.—The first noteworthy legislative work accomplished by the reinstated Imperial Government was the issue, soon after its installation, of an Imperial Rescript by which the first corner-stone of the present Constitutional régime may be said to have been laid. That Rescript proclaimed, among other things, that "conferences shall be convoked all over the country and the affairs of State shall be determined by public discussion." The first legislative organ established in pursuance of that policy was the dual body consisting of the "Right House" and the "Left House" created in 1871. The "Right House" was composed of the Heads of Executive Offices of State and the other officials specially nominated by the Government. The "Left House" had to take charge principally of legislative work at the instance of either the Prime Minister or on its own initiative, while the "Right House" had to advise the Prime Minister as to the fitness or otherwise of the resolutions passed by the other House.

Right House and Left House.

The two Houses were abolished in 1874, to be superseded by the Senate (Genrō-in) and the Local Governor's Council. The former was composed of Peers and of men who had rendered distinguished service to the country or who were eminent on account of their erudition, and was to take charge of legislative matters either emanating from the Cabinet or introduced at the instance of the Senate itself. The Senate was also entitled to receive petitions about legislation, so that it may be regarded as a precursor of the present House of Peers.

The Senate.

The Local Governor's Council was something like a national assembly, composed as it was of officially nominated members; for as announced in the Emperor's Rescript addressed to the Council on the occasion of its first sitting, its object was "to attend to the affairs of State as the representative of the people's interests." In the same Rescript the Emperor declared that he had called together the said Council "in pursuance of the solemn promise, given by Us on the occasion of Our accession to the Throne, to summon delegates of Our subjects, to assist Us in the conduct of affairs of State, to make with those delegates arrangements calculated to cement the amicable understanding that prevails between rulers and ruled, and to enable both to co-operate for the common good of the country." The Governors who attended the Council "were under no danger of incurring the displeasure of the Government for any opinion enunciated by them at the meeting."

The Local Governor's Council.

Organs of Popular Representation.—The Council thus organized was abolished in 1880, but as meanwhile the system of local and municipal assemblies had been established, the organs for voicing popular opinion were now more satisfactorily arranged. A change in a similar direction was made in the following year when the institution of a national representative assembly in the year 1890 was proclaimed. On the 11th February of 1889 the Imperial Constitution, the Imperial House Law, the Law of the House, the Law of Election of the House of Representatives etc., were promulgated, and in October of the following year the first memorable session of the Imperial Diet was

convoked. In this manner did Japan obtain from her Emperor the great boon of a Constitution.

Legislative Procedure.—Projects of laws originate either in the Cabinet or in the Diet, and become law when they obtain the approval of the Emperor and the consent of the Diet. A project coming from the Government is introduced to the Diet after it has been submitted to and discussed by the Cabinet and the Legislative Bureau, and finally receives the sanction of the Emperor. Any project relating to a law connected with the Imperial Constitution must first pass through the hands of the Privy Council.

Legislative Organs. — Strictly speaking, the legislature may be said to be composed by the two Houses of the Diet, though in a larger sense the Cabinet, the Legislative Bureau, and sometimes the Privy Council may be regarded as forming part of the legislative machinery.

House of Peers.—This House consists of Princes of the Blood, Peers, men of distinguished services or of remarkable erudition, and representatives of the highest-tax paying section of the people. It enjoys practically identical rights in the legislature with the other House.

House of Representatives.—This House consists of members elected by the people; and all male subjects of over thirty years old are now eligible for election, there being at present no property or other qualification in consequence of the amendment of the Law of Election. Owing to the same amendment the electorates are no longer divided into small sections as they were before, and at present each prefecture is divided into urban electorates which are independent and rural electorates which return between them a fixed number of members determined according to the number of inhabitants contained in the rural districts.

Rights and Privileges of the Diet.—It must not be supposed that the Diet enjoys part of the rights of sovereignty, for, as we have already pointed out, these belong exclusively to the Emperor. The rights and privileges enjoyed by the Diet consists of the right of deliberating on legislative measures and of approving of such measures if they are considered to merit such approbation.

Those rights and privileges may be briefly summed up as follows:—(1) the right of receiving petitions from the people, (2) the rights of submitting memorials to the Throne and of representations to the Government, (3) the right of demanding explanations from the Government about administrative affairs, (4) the right of supervising the finances.

Legislative Forms.—There are six legislative forms, namely, Laws, Imperial Ordinances, Ordinances of the Cabinet and of the Departments of State, and Rules and Instructions. All these measures are published in the *Official Gazette*, and the date of the coming in force of a law is, unless otherwise specially determined, after the lapse of full twenty days from its promulgation, while all others are to come in force seven days after the issue of the number of the *Official Gazette* containing them.

A law may supersede an Ordinance, but under no case can an Ordinance supersede a law.

III. EXECUTIVE AND EXECUTIVE ORGANS.

General Remarks.—As already mentioned above, the organization of the executive was extremely simple in ancient times, and that the encroachment of the military classes reduced the Court during a long period of over seven centuries to a mere figure-head. The feudal system attained its greatest perfection under the Tokugawa Regency which extended over about three centuries of prosperity.

The Administrative Policy of the Tokugawa Regency.—The Regency adopted a policy of decentralization and, unless required by special occasions, it left the feudal princes to rule their own dominions with perfect freedom. The administrative system of the Regency, a system copied by the feudal princes, was extremely simple. The principal officials who conducted it were the Tairō (Premier), Rōju (Ministers) and Bugyo (Magistrates). The system followed by the Regency was not of much value theoretically but, in the amount of the practical benefit it accomplished, it was a good system, resembling in this the British constitution.

It was after the disappearance of the Regency and the ushering

in of the present Meiji Government that Japan began for the first time to possess a regular and efficient system of administration organs.

THE EXISTING ADMINISTRATIVE SYSTEM.—In the existing administrative system there is the Privy Council as the supreme advisory organ to the Emperer, while on the other hand there is the Cabinet as the central administrative headquarters, having under it nine Departments of State, that is to say, the Departments of Foreign Affairs, Home Affairs, Finance, War, the Navy, Justice, Education, Agriculture and Commerce, and Communications. A Minister of State presides over each Department, and the Government establishes Special Offices to deal with affairs relating to the auditing of the State finances, administrative matters, litigation and police. Each Department has under it a greater or less number of subordinate offices, and in this connection the Home Office stands out most conspicuously as it controls all the local offices and the various civic corporations.

The main points in the three administrative organs, central, local and civic corporations will be described below.

CENTRAL EXECUTIVE ORGANS.—The central administrative organ is divided into executive bodies and advisory bodies. The former consist of the Cabinet, the Departments of State, and special offices, while the Privy Council, Codes Investigation Commission and similar commissions make up the latter.

First about the higher executive bodies with the Cabinet at their head.

Cabinet. The Cabinet is composed of the Ministers of State presided over by the Premier who, in obedience to the Emperor, deals with all matters relating to administration.

The principal matters to be determined by the Cabinet are as follows :—

a. Drawing up of projects of laws and compilation of Budgets and Settled Accounts.

b. Matters relating to treaties with foreign countries and to international questions.

c. Imperial Ordinances relating to official organization or the operation of laws.

d. Disputes between the Departments of State as to jurisdiction.

e. Petitions of people sent in either by the Emperor or by the Diet.

f. Disbursement not covered by the Budget.

g. Appointments and other movements of officials of *chokunin* rank and of local Governors.

Matters of importance coming under the direct supervision of the Ministers of State may also be laid before a Cabinet Council.

Attached to the Cabinet is the Legislative Bureau which deals with matters relating to the drafting of projects of law or of Ordinances or their amendment or revocation, whether such drafting or amendment is done at the instance of the Cabinet, or of a Department of State or at its own initiation. It is also entitled to express its own opinion about those matters.

Departments of State.

The Minister who has charge of a Department of State is empowered to issue Departmental Ordinances and to issue orders to the chiefs of the Metropolition Police, the Hokkaidō Administration Office and provincial Offices in connection with matters coming under his direct control.

Special Administrative Offices.

There are two kinds of special Offices, one independent of the Departments of State while the other is subordinate to them. The Board of Audit and the Administrative Litigation Court belong to the first class. On the other hand there are quite a number of Special Offices subordinate to one or another of the Departments, these being as follows, to mention only those that are important :—

Those that are subordinate to the Home Office :—Metropolitan Police Office, Ise Great Shrine and Great Shrine Construction Offices, Hokkaidō Administration Office, Provincial Offices, Formosan Governor General's Office, Sanitary Laboratory, Blood-serum Laboratory, Vaccine Laboratory, Public Works Inspection Offices, Epidemic Diseases Laboratory.

Those that are subordinate to the Department of Agriculture and Commerce are as follows :—

Forest Inspection Offices, Mining Inspection Offices, Agricultural Experimental Farms, Industrial Laboratory, Geological

Surveying Office, Steel Foundry, Yokohama Silk-Conditioning House, Mineral Fertilizer Surveying Office, Horse Breeding Pastures and Studs, Cattle Breeding Pastures, Sericultural Training Schools, Fishery Training Schools.

Those that are subordinate to the Department of Financ, are:—Inland Revenue Offices, State Monopoly Offices, Customs House.

There are, besides, Post and Telegraph Offices and Telephone Offices under the Department of Communications; Prisons and Penitentiaries under the Department of Justice; legations and consulates under the Foreign Office, various kinds of educational institutions under the Department of Education, military or naval schools under War Office or the Admiralty.

Advisory Organs of the Higher Executive Bodies.—

Privy Council. The Privy Council is the supreme advisory body to the Emperor and attends to (*a*) matters relating to the Imperial House Law; (*b*) matters relating to projects of laws and Ordinances with reference to clauses in and laws and Ordinances pertaining to the Constitution; (*c*) matters relating to the declaration of a state of siege, to the issue of urgency Ordinances to take the place of laws when the Diet is not sitting, and to punitive provisions of the Constitution; (*d*) matters relating to treaties and international agreements, matters relating to the organization and rules of the Privy Council; (*e*) other matters on which it is ordered by the Emperor to deliberate.

The Codes Investigation Commission. Subject to the control of the Prince Minister, the Commission draws up drafts relating to the Codes and Laws and Ordinances appertaining thereto, and also investigates matters relating to the putting in force of treaties.

Central Sanitary Association. Subject to the control of the Home Minister, this Association submits its opinions on points referred to it by the Minister in regard to public hygiene and epidemics among domestic animals.

Subject to the control of the Home Minister, the

Public Works Commission. Commission submits its opinions on points referred to it by him in regard to various public works.

Higher Educational Commission. Subject to the control of the Educational Minister, the Commission submits its opinions on points referred it by him in regard to higher education.

Railroad Council. Subject to the Minister of Communications the Council submits its opinions on points referred to it by him in regard to railroads.

Local Administrative organs. — The local administration system adopted by the Tokugawa Regency was based on the decentralization principal, and the local daimyos were left to do what they liked in the governing of their own dominions. With the the abolition of the feudal system and the re-establishment of the Imperial Government, the administration policy was one of centralization, with the object of bringing affairs in the provinces to a state of uniformity. This policy was attended by some evil, as it did away with some beneficial local customs, but of course this evil was outweighed by the immense improvement effected in the local administration.

Meanwhile the Government saw that the time had arrived for starting the contrary programme of decentralization of authority, and of allowing people to take part in admistrative affairs. Thus in 1880 the Provincial Assembly Regulations were enacted, followed in 1884 by the Civic Corporation Regulations. In 1888 the self-government system was in thorough working order, as it exists to-day.

The local administration system is divided into prefectual administration and sub-prefectual (*Gun*) administration. It combines two functions, that of being, on one hand, a part of the great administrative organ of State, and, on the other, of acting as a self-governing mechanism.

Prefectural Administration.

As to the former all matters are in the charge of the Governor who has to carry out, under the supervision of the various Ministers of State, Laws and Ordinances, also to attend to all the administrative affairs in his prefecture, and to keep peace and order therein. He is therefore authorized to summon

military help from the nearest headquarters whenever an emergency requires it.

In regard to the self-government arrangement, it may be stated that every prefecture has a prefectural assembly composed of members who represent the people in the urban and rural districts. It discusses and deliberates on financial and other important matters of the locality. The assembly is convoked by the Governor at fixed periods, and the Local Council, which is a permanent institution, takes part on behalf of the assembly in administrative affairs, and attends to all affairs which the assembly cannot see to when it is not in session.

Sub-prefectural Administration.

It was in 1878 that the sub-prefectural administrative arrangements were first elaborated in definite form. At present this administration does not differ in its procedure and principles from the prefectural administration of which it forms a part, and, just like the other, its system is twofold, that is it combines ordinary administrative business and self-government business.

Self-Government System.

The Self-Government System as developed in 1888 is divided into three grades, Prefectural, Sub-Prefectural and Civic Corporations (cities, towns and villages). Of these three divisions the last one relating to municipal and rural communities represent the self-government mechanism in its most striking form, for in the other two higher divisions, owing to the greater part they have to play in administrative affairs their self-government function does not lie so distinctively on the surface as in the other. Both legislatively and also practically the municipal and rural communities are *bona fide* self-governing bodies for they are entitled by law to enjoy the rights of juridical persons, also to incur obligations as such, and to arrange all public matters relating to their own communities.

IV. JUSTICE AND ITS ORGANS, WITH PARAGRAPHS ON THE CODES.

General Remarks.—The only authentic record worth noting in the history of justice in this country is the existence in the "Middle

Ages" of a special office for dealing with criminal affairs, while during the period of military ascendency those matters were taken charge of by Censors. Coming down to the Tokugawa Regency, magistrates were made to deal with civil and criminal affairs. They had not, however, any laws to follow, but were obliged to judge each case according to the lights of their own understanding and in conformity with the broad principle of chastising wrong and of upholding right.

The first regular court of justice established by the Meiji Government was the Tokyo Court of Justice established in Tokyo in 1871. Within the following four years one Supreme Court and four Courts of Appeal, besides a number of lower tribunals were established. Several improvements were subsequently carried out, till at last by the Law of Organization of Courts, the present system was developed.

Abolition of the Extra-territorial System.—The most noteworthy chapter in the history of our judicial system is the doing away in 1899 with the extra-territorial rights which the Western Treaty Powers retained in virtue of the treaties concluded before the Restoration, and the bringing of foreign residents in Japan under the Japanese laws.

Organization.—Our judicial system is divided into four grades, that is Supreme Court, Appeal Courts, Local Courts, and District Courts. The last is the lowest tribunal and is conducted by a single Judge, while in the Local Courts three collegiate Judges sit on a case, in the Appeal Courts five collegiate Judges, and in the Supreme Court seven collegiate Judges. Public Procurators are attached to each Court, on commission from the Minister of Justice. It is needless to state that ordinary Judges represent the right of sovereignty of the Emperor and that their function is held sacred and inviolable. Hence their tenure of office is securely guaranteed by the Constitution. Judges are also amenable to special disciplinary laws.

Number of Courts.—Both the Judges and Public Procurators secure their appointments by passing the regular examination of Judges and Public Procurators.

The following table shows the number of courts and the staffs as they stood at the end of 1901.

	No.	No. of Judges.	No. of procurators.	Population per one Court.	Area of district per one Court.
Supreme Court ...	1	25	7	45,193,583	24,998.80
Appeal Court ...	7	121	29	6,456,227	3,571.26
Local Court... ...	49	399	140	922,319	510.18
District Court ...	310	557	159	145,786	80.64

BARRISTERS.—It may be added that the barristers are regulated by the Barrister's Law, and that various strict measures are in force with regard to their qualifications, rights and privileges, obligations, etc. They are amenable to the same disciplinary law as that enforced in the case of Judges.

WORK OF CODIFICATION.—Japan had no written code of laws properly speaking till about 30 years ago. The first attempt made in this direction was the compilation of a criminal code in the year 1870 to be amended three years after. The code was far from being perfect, having been mainly based on our ancient customs modified more or less by Chinese laws.

In 1882 year the Criminal Code and the Code of Criminal Procedure were enforced. The latter was subjected to a thorough amendment in 1889, and similarly the former is about to be amended with the consent of the Diet. The principal statute laws thus far enforced are as follows:—

Imperial Constitution (issued in 1889)
Law for the Application of Laws (in 1898)
Law of Nationality (in 1899)
Criminal Code (in 1898)
Criminal Procedure (in 1890)
Civil Code(in 1896–1898)
Civil Procedure (in 1890)
Commercial Code(in 1890–1898)
Insurance Law (in 1900)
Law relating to the Registration of Real Estate (in 1899)
Law relating to the Organization of Courts of Law (in 1890)
Law regarding Ships (in 1899)
Law regarding Crews of Ships (do.)

CHAPTER VI.—Land as an Institution.

History—Classification—Burdens—Ownership.

HISTORY.—The history of the land in this country especially as regards the ownership of it, may be briefly divided into three parts. (1) The period of the ancient Imperial régime, (2) the period of military ascendency and feudalism, and (3) the modern period of the reinstated Imperial régime.

During the first stage all the land belonged theoretically to the Court, but, coming to the period of feudalism and military ascendency, we find that this power was practically held by the feudal barons. It was by a very precarious tenure that people were allowed to own their own land, but after the Restoration that right of the ownership of land by private individuals was firmly established by law.

In 1867 the Imperial Government issued a proclamation to the effect that the land in the villages should belong to the villagers; in 1874 the land was subdivided into State land and the land belonging to private individuals; and, finally, in the following year it was proclaimed that the title deeds should bear the names of the owners.

CLASSIFICATION OF LANDS.—State land and private land are classified, the former into four and the latter into two categories.

The four categories of State land are as follows:—

1. Land belonging to the Imperial Court, and land belonging to Shinto shrines.
2. Land belonging to Princes of the Blood and land belonging to the central and local Government offices.
3. Mountains, hills, woods and forests, plains, rivers, seas, lakes, ponds, swamps, drainage ways, ditches, embankments, roads, cultivated fields, etc. not belonging to private individuals; also land occupied by railroad tracks, telegraph and telephone posts, premises of lighthouses, places con-

taining historic remains, public parks, graveyards, and all other such land not belonging to private individuals.

4. Land occupied by temples, schools, hospitals, etc. not belonging to private individuals.

The two kinds of private lands are as follows:—

1. Arable land, places of residence, woods and forests covered by title deeds; lands occupied by schools, hospitals, storehouses, pastures, shrines, temples, etc. owned by private individuals or by several persons or by one or several village communities.
2. Land occupied by shrines, graveyards, sewer-ways, reservoirs, embankments, wells, ditches, highways, etc. not belonging to the State.

There are five kinds of land registers, namely national registers, prefectural registers, provincial registers, district registers and town and village registers. Special rules exist for regulating the determination of the various kinds of land.

Burdens on Land.—State land is of course exempted from taxation, and title-deeds are only issued to land coming under the 2nd category. For private lands the title-deeds are given for lands of both kinds, but those under the 1st category alone are subjected to taxation.

Taxable lands are divided into two classes as follows:—

1. Arable lands, dwelling lands, salt-fields, mines and mineral springs.
2. Lakes, ponds, woods, pastures, plains and miscellaneous lands.

Lands newly reclaimed are exempted from taxation during a certain period of years.

The Land Tax which stood at 2.5 per cent. of the assessed value until a few years ago was raised for a period of five years beginning from 1885 to 3.3 per cent. in order to meet the increased Government expenditure occasioned by the so-called post-bellum measures. The limits of five years having expired it was rescinded in 1902. The assessed value of course differs according to local circumstances, relative fertility, and other accidental causes. It is the principle of the Land Tax not to make any alteration according to the relative success of crops.

The Land Tax carries with it two kinds of rate, Local Rate and Municipal or Town or Village Rate. Unless with the approval of the Minister of Home Affairs the former cannot exceed 1/3 and the latter 1/7 of the main tax. The two rates are collected from the owners of the lands, except in some special cases.

Right of Ownership of Land. — The owner of a piece of land is of course entitled to do whatever he likes with his land, provided his act is not illegal and does not infringe on the rights of others. The owner of a piece of land has special privileges and obligations with regard to neighboring pieces of land, these being the right of way and the right of using other's land when one has to build or repair his house or fence, etc. On the other hand a space of 1½ *shaku* from the common boundary line must be left in building a house on one's land, while a window or veranda placed within the distance of less than 3 *shaku* from the common boundary and from which the neighbor's premises can be seen, must be provided with a shutter. Then there are provisions for getting rid of superfluous water on one's land, but of course when such water happens to injure property of any kind in adjacent land situated on a lower level, the owner of the land from which the water came must pay for the damage done.

Besides the right of owership, there are also the right of superficies, of perpetual lease and of emphyteusis attached to land, but these being dealt with minutely in the Civil Code need not be explained here.

It may, however, be stated that land is liable to be requisitioned when the interests of the public render such a step necessary. For particulars on this head, the Law for the Requisition of Land should, however, be referred to.

A special arrangement exists for the convenience of the trial extraction of minerals, an arrangement which is far more convenient than that relating to the ordinary process of requisition, for in this case of trial extraction the whole business is left under the case of the Chief of the Local Mining Inspection Office in the jurisdiction of which the case has occurred.

Land may constitute the hereditary estate of a Peer, and no land of this kind can be sold, transferred, mortgaged or hypothecated.

PART II.

PRIMARY INDUSTRIES.

SECTION I.

AGRICULTURE.

CHAPTER I—Introductory.

Position of Agriculture in National Polity — Features of Japanese Agriculture—Free-holders and Tenant-farmers.

Position of Agriculture in National Polity.—The history of agriculture in Japan is coëval with the history of the country itself, for the sovereigns that have successively ascended the Throne since the accession of the first Emperor devoted all their attention to the prosperity and progress of this most important industry of the realm, so that agriculture, though subjected more or less to viscissitutes during that long period, still remains the bulwark of our national prosperity and power. In short, Japan is still essentially an agricultural country.

The development of agriculture has been markedly accelerated since the introduction of the Western sciences and arts after the throwing open of the country to foreign commerce and intercourse fifty years ago. It need not be pointed out that Japan's traditional policy of fostering agriculture will be continued in the future.

Feature of Japanese Agricultube.—In describing the condition of agriculture in this country there are two points that stand out prominent. They are (1) agriculture, as it is carried on here, is essentially tillage, and has little to do with stock-farming;

(2) and, as compared with agriculture in Europe and America, the scope of our farming operations is extremely small.

The fact is that our forefathers who mainly subsisted on cereals were further led by religious prejudices to eschew animal food. Then the absence of wide plains, comparatively speaking, naturally obliged our farmers, then as now, to conduct their business on a small scale.

Foreigners not well acquainted with the state of affairs in Japan may be puzzled on being told that the average extent of land tilled by one farming family does not exceed one hectare. They may even wonder how our farmers can subsist on such a small patch of cultivated land; but this surprise, though quite natural for foreigners, will practically disappear when they remember that the system of tillage carried on by our farmers is extremely thorough and careful, and that, as two even three crops are raised on the same field in one year, even a farm measuring only one hectare is really equivalent in productive capacity to a farm of two or three hectares in most other countries. Besides, our farmers are not required to attend to field work all the year round and when the field work makes no great demand upon their time, they can undertake other job work, while the women and children in their families also make themselves useful by raising silkworms, reeling silk or doing other such suitable work.

As the natural result of the peculiar geographical formation of Japan, that is, of its extending so far north and south and including therefore so many degrees of latitude, our system of agriculture presents diverse and distinct features. Moreover, this tendency to diversity was further enhanced during the pre-Restoration days by the division of the country into a large number of practically independent communities. The consequence is that, while in some districts sericulture is predominant, in others tea demands the most attention, while still others have sugar or other products as the staple farm produce. However, owing to the reasons mentioned above, stock-farming is as yet comparatively backward, though the rearing of live stock for tillage or draught work is carried on to no small extend in some districts.

Free-holders and Tenant-Farmers.—Accurate data about the land tilled by independent farmers and tenant farmers are

not procurable, and the latest returns available are those for 1888. The ratio between the two kinds of farmers stood as follows in 35 prefectures.

	Land tilled by Independent farmers.	Land tilled by Tenant farmers.
Puddy fields	60 per cent.	68 per cent.
Upland fields	40 „	32 „

According to the same returns there were in 38 prefecturers about 1,470,000 independent farmers and about 2,000,000 farmers who were partly independent and partly lessess of land belonging to others, while the *bona fide* tenant farmers numbered about 950,000. In other words, the farmers who were partly or wholly tenant farmers aggregated about 3 millions, and therefore about double the number of free-holders. As matters have become less favorable since that time for small free-holders, the ratio of tenant farmers and tenant farmers must have grown more. Indeed the condition of tenant farming is far from being satisfactory, for, according to the investigations made in 1887, out of ten parts of the products of puddy fields throughout the country the landowners obtaines about six and the tenant-farmers only four, while in regard to the upland fields the relative ratio was four and a half parts and five and a half respectively. The steady increase of population at a rate far beyond that of tillage land constitutes an important factor in keeping the rents high, for tenant farmers are obliged from sheer necessity to compete for leases, and in raising of course the rents as the natural result of their competition. In extreme cases the share of harvest that falls to the lot of tenant farmers is barely sufficiet to pay the cost of the manure applied to the fields.

Such being in general the condition of our tenant-farmers, in most cases they are obliged to depend in tillage on the labor of their own families, while the limited funds they have at their disposal for getting fertilizers or farm implements further hampers them in their work. Under these circumstances, they find it hard to keep up with the progress of the times, and this hard lot is also shared by small free-holders. But the evil does not end here, for our farming classes which constitute 60 per cent of the whole population, are steadily increasing in number, so that those who can afford to do so are

migrating to cities and towns. In view of this circumstance both the Government and the general public are doing their best to improve the mode of tillage, to encourage the use of labor-saving machines and devices, and also to provide various conveniences to encourage their settlement in unexploited places. It may safely be expected that the condition of our farmers will become much better in the near future than it is now.

CHAPTER II.—Factors of Tillage.

Climate—Land—Capital—Labor.

I. CLIMATE.

General Remarks.—Owing, as has been already described, to the peculiar georgaphical formation of the land, the climate of Japan is naturally very much diversified. A somewhat detailed account about the climate being given in the preceeding part, it is enough to explaine here the special influence which the climate exerts on the agriculture of the country.

Average Yearly Temperature.—The average yearly temperature in Okinawa and Formosa is above 20° C., while in Hokkaidō where the other extreme is to be found, the average is not more than 5°, according to places. The difference between the maximum and minimum temperatures is greater in the north than in the south, for while in summer the temperature stands comparatively high in the north, in winter, owing to the influence of the severe climate on the continent, the thermometer falls in many places below zero.

The prevailing wind in summer is a moist southerly wind, but in winter the cold northerly wind coming from the continent reigns supreme. The season during which one of these two kinds of wind is exchanged for the other presents a peculiar meteorological aspect. Early in summer the moist southerly wind that begins to prevail brings about the rainy season, while in autumn when the northerly wind begins to take the place of the southerly, the low atmospheric pressures that frequently make their appearance in the south are liable to invade the country and to cause storms. The northerly wind coming from the continent in winter deposits its moisture borne from the Sea of Japan on the districts bordering that sea.

Humidity.—As a rule the moisture is greater in the southern provinces and less in the northern, the rate in the latter being about one half that in the former. It is natural, therefore, that rain

should be copious in summer in the southern districts and that snow should fall to a considerable extent in winter in the northern provinces. The average amount of rain and snow during 1901 or in succeeding year is shown below:

	mm.		mm.
Taihoku	2,228	Niigata	1,765
Kagoshima	2,061	Fukushima	1,233
Ōita	1,614	Aomori	1,282
Nagasaki	1,951	Sapporo	979
Numazu	1,836		

Crops as Influenced by Climate.—The crops raised in Japan are naturally influenced by its climate, and it is principally on account of the copious rain-fall and the high temperature in summer that rice is so universally grown throughout the country The only drawback is the coming of storms between summer and autumn. Other tropical and sub-tropical plants besides rice are well suited to our country owing to the great heat in summer; but, on the other hand, owing to the rather sudden fall of temperature in winter, even plants growing in the temperate zone can not easily stand the rigor of climate in that season.

In winter, frost comes on almost everywhere throughout the country, while snowfalls are heavy and frequent in the north-eastern districts. It is in these districts, that barley and wheat and rape can be grown with success. However, the weather is apt to becom humind at the ripening season of barley and wheat, thereby impairing to no small extent the quality of those grains. The buds of the mulberry and tea plants, too, are frequently damaged by the frost that comes in early spring. The cultivators of those important plants are therefore devising various measures to prevent this injury.

In warmer places the better decomposition of manures and the vigorous growth of plants make it possible to raise in a year two or even three crops on the same field, but the farmers in cooler districts must be contented with only one. The two most convenient crops for puddy fields are rice in summer and barley or *genge* (Astragalus siniens. L.) in winter. When only one crop can be raised, the choice falls on rice.

The choice of crops bears of course an important relation to the economy of farmers, for while their time is occupied all the year

round when the tillage can be carried on throughout the year, they can have more or less time at their disposal when farming operations are suspended in winter. As a general rule our farmers are least busy in winter, and this leisure they employ in repairing their tools and implements or making other arrangement against the coming season.

Stock-farming also bears an important relation to climate, but, as mentioned above, this branch of farming is decidedly secondary, both from traditional custom and from the lack of space available for it. It is, however, gradually coming to the front in the northern districts.

II. LAND.

General Remarks.—Classified according to the nature of mother-rocks from which it is derived, the soil of Japan is divisible into several kinds; but according to geological formations only two kinds of soil exist in Japan, generally speaking; these soils being igneous and sedimentary.

Soils derived from igneous works occupy about one-third of the whole area of the country, and as these generally exist on hilly places only a small portion of them can be brought under cultivation. The soil of these cultivable areas is generally loamy and fertile.

Alluvial Soil.—Soils of sedimentary formation are more widely distributed than the others, generally occupying plains and therefore easily accessible for purpose of cultivation. Of the various kinds of soils of sedimentary formations, those belonging to the Tertiary, Diluvium or Alluvium system occupy a very wide area and generally form the most valuable arable land in the country, while the remainder belongs to Paleozoic or Mesozoic formations and is limited in extent. The soils of Tertiary or Diluvium formations, existing in the northeastern parts of the Main Island in larger proportion than in others, are generally clayey, containing, as we proceed towards the north, a larger quantity of organic matter. They are moderately fertile. The soils of Hokkaidō, also belonging to these two formations, are richer in organic matter which has accumulated for

many centuries. They are therefore far more fertile than the same kind of soils found in the Main Island.

The soils belonging to Alluvium formation are widely distributed throughout the country, and as they occupy level places easily admitting irrigation, they are well adopted for the cultivation of rice. The presence of great number of streams, short in length and rapid in current, explains the wide distribution of alluvium soils in Japan, and why it has a tendency to be sandy. However, owing to the comparative abundance of rain fall, the soil is fairly productive.

NATURAL CLASSIFICATION OF LAND.—The land in Japan proper (exclusive of Formosa) occupies an area of 24,794.36 sq. *ri* which corresponds to 38,555,229 *chō*. This land can be classified as followes as to ownership and kind:—

1ST KIND. (Private Land).

	Area *cho.*
Land owned by private individuals	14,272,339

(a.) TAXABLE LAND.

Puddy or upland fields	5,045,278
Dwelling land	384,635
Salt fields	7,090
Forests	6,997,571
Plains and pastures	1,075,246
Mineral springs, ponds, swamps and miscellaneous land.	20,967
Total...	13,530,788

(b.) LAND EXEMPTED FROM TAXATION FOR SOME YEARS.

Newly opened land	10,556
Waste land	232,730
Puddy fields...	71,721
Upland fields	133,164
Dwelling land	3,230
Salt fields	8,900
Plains and pastures	11,865
Mineral springs, ponds, etc.	3,236
Total...	243,286

(c.) LAND EXEMPTED FROM TAXATION AND UNTAXABLE LAND.

School land	1,660
Premises of shrines	1,164
Cemeteries and graveyards	22,773
Sewer-ways, drainage ponds, etc.	49,638
Embankments	4,027
Railroad track	7,611
Protection forests	401,045
Roads and water-works routes	828
Farm boundaries	9,277
Others	236
Total	498,265

2ND KIND.

Land belonging to the State and Court	21,394,805
A. Land belonging to the Court, Imperial Mausolea, Shrine premises	3,670,803
B. Land belonging to Princes of the Blood, Government land	80,171
C. Government land, forests, plains; public parks, former foreign concessions, foreign cemeteries, etc.	17,643,063
D. Premises of Government and local institutions, hospitals, etc.	766
Grand Total	35,667,144

If the grand total is deducted from the gross area of 38,555,229 *chō*, there remain 2,888,085 *chō*, which account for highways, places under water, etc.

CLASSIFICATION OF ARABLE LAND.—The gross area of our arable land is 6,120,519 *chō*, which can be divided as follows according to uses:—

Puddy fields	2,748,575 *chō*.
Upland fields (containing	2,296,698 ,,
Mulberry fields	222,731 ,,
Tea plantations)	31,889 ,,
Plains and pastures	1,075,246 ,,

Per centage of Arable Land.—The whole area of the arable land in Japan is only 15.7 per cent of the whole area of the Empire (exclusive of Formosa): in other words, the whole area of arable land extends over an area of 38,555,229 *chō* as before mentioned. On the other hand the area of paddy and upland fields, amounting to 5,045,273 *chō*, corresponds to only 12.9 per cent. of the whole surface of the country. The comparatively small area of arable land is solely attributable to the hilly nature of our country.

Distribution of Arable Land.—The foregoing extent of arable land is distributed among the local prefectures in the following table:—

Prefecture.	Paddy fields.	Upland fields.	Plains and pastures.	Total.
Tokyo	17,892	42,265	7,664	67,821
Kanagawa ...	23,868	49,855	25,949	99,672
Saitama	66,876	97,576	9,110	173,562
Chiba	102,101	73,499	19,339	194,939
Ibaragi	88,152	101,698	20,172	210,022
Tochigi	50,199	54,232	25,448	129,879
Gumma	21,911	69,498	23,272	114,681
Nagano	68,886	90,547	183,776	343,209
Yamanashi ...	18,443	41,898	13,250	73,591
Shizuoka ...	60,993	65,566	75,067	201,626
Aichi	87,595	60,921	6,899	155,415
Miye	73,611	24,629	4,602	102,842
Gifu	61,644	47,428	8,490	117,562
Shiga	63,215	11,222	10,106	84,543
Fukui	45,261	14,391	2,562	62,214
Ishikawa... ...	50,879	30,665	3,317	84,861
Toyama	76,148	18,220	3,998	98,366
Niigata	162,163	77,092	14,726	253,981
Fukushima ...	91,451	72,408	24,112	187,971
Miyagi	80,706	38,320	13,310	132,236
Yamagata ...	84,378	42,201	14,991	141,570
Akita	98,404	35,025	75,699	209,128
Iwate	50,514	86,776	97,041	234,331
Aomori	5,813	51,773	69,678	179,465
Kyoto	46,578	18,957	1,317	66,852
Ōsaka	53,568	16,759	673	71,000
Nara	33,118	10,841	910	44,869

Prefecture.	Paddy fields.	Upland fields.	Plains and pastures.	Total.
Wakayama ...	31,622	12,832	1,380	45,834
Hyōgo	106,240	33,806	12,541	152,587
Okayama ...	81,530	38,630	4,375	124,535
Hiroshima ...	74,557	36,991	2,824	114,372
Yamagata ...	79,077	34,668	2,599	116,344
Shimane... ...	54,729	41,518	1,404	97,651
Tottori	31,521	13,240	60,160	104,921
Tokushima ...	22,488	38,480	1,406	62,374
Kagawa	39,369	10,305	300	49,974
Ehime	47,067	69,614	653	117,334
Kōchi	34,633	80,867	1,856	117,358
Nagasaki ...	33,137	56,316	22,686	112,139
Saga	50,404	20,358	27,761	98,523
Fukuoka	109,618	52,177	45,939	207,734
Kumamoto ...	65,361	107,938	13,878	187,177
Ōita	591,519	49,194	59,388	159,101
Miyazaki... ...	39,461	67,936	22,174	129,571
Kagoshima ...	55,387	161,473	35,546	252,406
Hokkaidō ...	1,478	15,814	2,523	19,815
Okinawa ...	3,723	8,355	unknown	unknown
Izu group ...	65	1,903	450	2,418
Total ...	2,748,575	2,296,698	1,075,246	6,120,519

Conditions of Arable Land.—The cultivation of rice being the principal item in the economy of our farmers, the greater part of the arable land consists of rice fields which often occupy places situated in low and wet places and not quite suited for other crops. Of these rice fields 30 per cent admit of receiving a second crop after the harvesting of rice. Upland fields are to be found on the other hand in elevated places where the drainage is good. In districts which are very densely populated or where special agriculture products are to be raised, even the slopes of the hills are utilized for upland farming.

Average Area of Cultivated Lots.—The lots of cultivated fields are extremely small. According to the latest returns 53 per cent of the paddy fields consist of lots measuring less than 5 *se*, while about 74 per cent of upland fields consist of lots of less than 1 *tan*. The average extent of lots (exclusive of Hakkaidō and Formosa) is 4.14 *se* for wet fields and 5.12 *se* for the other. The

lots for wet fields are those registered in the Land Records, and as each lot is further subdivided the real extent of each lot does not exceed 2 *se*. Such an extraordinarily small extent of cultivated fields is principally due to the comparative absence of level plains, to the necessity of irrigation, and also to the fact that tillage is principally done by hand. Besides, the shape of the lot, too, is, as a rule, very irregular, and this necessarily entails serious inconvenience on the cultivator. It is in view of this that of late the question of adjusting farm-lands has begun to attract serious attention in agricultural circles.

IRRIGATION AND DRAINAGE.—Irrigation and drainage being indispensable for the cultivation of rice, provisions for facilitating them have been made since ancient times. The sovereigns of the country have also shown a great solicitude to make these provisions as complete and perfect as possible. The water used for irrigation is either led from rivers or supplied by storing rain-water in reservoirs.

Mode of Irrigation.—The usual mode of irrigation for rice fields consists in leading the water into those fields till it has accumulated there in a sheet suitable in depth and volume. The farm is therefore made very level and is encircled by boundary walls 30 to 34 centimetres in height. While the water is led into the farm from an elevation, it is made at the same time to flow out by an outlet provided at the other end of the farm. The other crops receiving irrigation are generally cotton, indigo and sugar cane, and the irrigation for them consists in leading water into the spaces between the ridges, and causing it to remain there, till it soaks through.

The condition of the rivers naturally bears an important relation to irrigation and also to the success of farming. The recent reckless felling of trees at the head waters of rivers has made the beds of rivers liable to rise, as to obstruct the exit of water from the rice fields, the surface of the rivers being often higher than the water in the farms, and also to cause far more serious damage by overflowing the embankments in time of heavy rain and flooding the fields situated in close proximity. In view of these considerations, the Government is at present doing its best to prevent such ravages

on the part of unruly rivers, and has by means of legislation devised measures for protecting the forests at the headwaters. Farmers are made to organize themselves into irrigation guilds and to make all the required arrangements for the protection of their common interests. All these legislative measures have not yet been completed, but when they are completed, the benefits derived by the farmers from irrigation will be much greater than at present, while the risk of inundation will be minimized. It ought to be added that besides constructing reservoirs wherein to store rainwater, at a place where water for irrigation purposes cannot be easily procured owing to the high situation of the farms, farmers use treadmills or water-mills to raise water. Steam mills are even employed when a large quantity of water is required for elevated farms.

MODE OF DRAINAGE. — The waste water coming from the irrigated fields is led off by a net-work of drainage ways, mostly small open channels, and is finally discharged into rivers. But in low places where this natural method of drainage is not admissible, waste water must be removed either by water mills or by steam pumps. To some limited extent, and especially in places where the waste water is liable to stay, a subterranean drainage system is adopted.

SOME IMPROVED ARRANGEMENTS. — Of the improved arrangements of farming those that are generally carried out are the adjustment of farm-lands, and the improvement of the drainage, irrigation, surface coating of the soil, etc.

I. ADJUSTMENTS OF FARM-LANDS.—As already described in the preceding part, the size of farms in our country being small, their enclosure by walls and farm-fences naturally entails a waste of time and of space that might to be employed to better advantage, not to speak of the danger to which such enclosure gives rise of providing reptiles, rodents and injurious insects with a snug dwelling-place in the boundary lines or paths. The amount of time which our farmers lose owing to the small size of the farms may be easily imagined when it is remembered that though the average area of the farm tilled by one family does not exceed 9 *tan* 3.15 *se*, the different farms making up this average total are generally scattered about, and very rarely situated at one place. It was to

obviate this disadvantage that the Government, with the approval of the Diet, enforced the law for the Adjustments of Farm-Lands. from January, 1900. This measure has been welcomed by the public, and already the provisions set forth in it have been carried out in, 300 places where re-arrangements of fields amounting altogether to over 15,000 *chō* in area, have been effected. Some of the benefits derived from this measure are described below :—

a. Owing to the size of the lots being enlarged and their shape made regular, farm-work is considerably expedited and farm-animals and labor-saving machinery can be more easily employed.

b. Owing to the farm-boundaries or paths being straightened and those that are useless destroyed, the productive power of a given extent of land thus treated, is increased at the average rate of 5 per cent.

c. Drainage and irrigation ways being re-constructed or constructed *ab initio*, both the drainage and irrigation systems can be brought to a state of greater perfection. As the disadvantage arising from an insufficiency of irrigation water or from its excess is done away with, the productive power of the farms is increased.

d. Farmers being encouraged to exchange their fields for fields owned by others, so as to collect as much as possible in one place the farms owned by one proprietor, all the evils and disadvantages incidental to the scattering of farms owned by one proprietor are done away with or minimized

II. Drainage.—The drainage of paddy-fields is specially important, for, being generally saturated with water, they are hardly fit to admit of cultivation for the raising of a second crop after the harvest of rice. This is of course a grave economic disadvantage and it is satisfactory to see that with the advance of knowledge among farmers this point has begun to attract their attention, with the result that, in not a few districts, subterranean drainage systems have been constructed. In some places even special implements are used to effect the removal of superfluous water. Upland farms being naturally dry, owing to their situation, do not generally require any attention to be paid to their drainage.

III. Irrigation.—Irrigation is universally carried out owing to the necessity of rice cultivation, but very rarely is this irrigation effected for the purpose of increasing the fertility of the farms. In some places, however, the water from the streams flowing close by is led into the farms during winter, to cause it to deposit its sediment and thus to increase the fertility of the farms.

IV. Surface coating of soil.—The mixing of sand with soil which is too clayey, or the addition of clay or vegetable mould to soil which is too light and sandy, has been extensively practised by farmers from early times.

V. Burning of surface soil.—Surface soil abounding in vegetable matters is often burned in order to diminish their quantity, and in some cases the woods or grass land cleared for cultivation are also burned to improve the soil.

MODE OF UTILIZATION OF ARABLE LAND.—Arable land is utilized to the greatest extent as rice fields, after which come upland farms including tea plantations and mulberry fields. Pastures are very scarce, and are owned by the Government for experimental purposes and by a limited number of stock-farmers.

Paddy-fields.—Though the utilization of land as rice fields is so universal, these fields are, however, far from being utilized as they ought to be, to the utmost extent, chiefly owing to the fact that they are not so largely used for raising the second crop of the year. It is only in Formosa, Okinawa and some parts of Shikoku where the temperature is higher than in the other parts of the country that rice can be raised more than two times in a year. In most other places, the low temperature of the soil, owing to the presence in it of too much moisture, obliges the farmers to content themselves with the cultivation of rice alone. Still owing to the improvements effected, the area of two crop land is gradually increasing, as shown below:—

Number of Crops raised in a year.

	chō.	Ratio to whole area of paddy-fields.
One crop fields	1,985,513	71
Two crop fields	755,983	29

The second crop raised after the cultivation of rice is generally barley, rape or *genge* (Astragalus Siniens. L.).

Upland Farms.—The most important point in the utilization of dry upland farms consists in the choice of crops to be raised after the preceding crop has been harvested. The crops raised in upland farms are generally grains, garden vegetables or crops of industrial value. Sometimes other crops are raised in the spaces left unoccupied by the crop that is growing. For instance, garden vegetables or sweet potatoes may be planted in fields where barley or wheat is growing.

Number of crops Raised in a year.

In general two crops are raised in one field, though in rare cases and in warmer districts as many as four are found; as, for instance (1) barley, (2) indigo, (3) beans, (4) rape.

Mulberry trees and tea shrubs are generally planted in fields set apart for this purpose, and they generally occupy land not well suited for the planting of more important crops, such as the slopes of hills, sandy dunes and such like places. They are also largely planted along the borders and edges of ordinary fields.

As mentioned above, upland fields devoted to the cultivation of grasses for feeding cattle are extremely scarce, and it is only in Hokkaidō and the O-U districts (i.e. the northeastern parts of the Main Island) where stock farming is comparatively thriving that grasses are cultivated to some extent.

RECLAMATION OF LAND.—The reclamation of forests or virgin land belonging either to private individuals or to the State, is going on more or less in Japan proper, exclusive of Formosa and Hokkaidō. Special provisions exist for selling State wild or forest land to people desirous of converting it into ordinary tillage land. To enumerate the kinds of land thus reclaimed recently, the area reclaimed in 1898 was 6,083 *chō*; in 1899, 9,890 *chō*; in 1900, 7,790 *chō*.

Reclamation in Hokkaido.—The reclamation is of course far more striking in Hokkaidō, where large tracts yet remain to be brought under cultivation and where the Government has adopted various measures for inviting settlers from other parts of the country, by offering them a fixed rate of land free of price under

certain conditions. The land thus opened up during the last seven years with the aggregate extent of reclamation existing at the end of each year is shown in the following table:—

Year.	Area newly reclaimed.	Total reclaimed area existing at the end of the year.
1893	8,691	65,677
1894	15,899	82,111
1895	15,677	97,806
1896	19,597	115,538
1897	24,697	142,707
1898	28,178	170,293
1899	37,002	215,595
1900	29,586	241,309
1901	35,924	265,785
1902	—	288,925

Land available for Reclamation in Japan Proper.

It is of course out of the question to expect in Japan proper any such striking reclamation. However there exist, even in Japan proper, lands which though still left unutilized for agricultural purposes may with profit be reclaimed by proper care and by the application of improved methods of agriculture. Supposing hilly land which is inclined at an angle of less than 15° is capable of being thus utilized this kind of land is found in Japan proper and Hokkaidō to the following extent:—

	Whole area.	Level land inclined at an angle of less than 15°.	Area under cultivation.	Level land inclined at an angle of less than 15° not yet reclined.
	chō.	*chō.*	*chō.*	*chō.*
Honshu	22,636,578	5,602,786	3,777,312	1,825,474
Shikoku	1,790,346	439,671	305,959	133,712
Kyūshu	3,676,347	1,102,666	883,008	219,656
Hokkaidō	7,848,783	2,383,889	215,595	2,068,294
Total	35,952,055	9,429,012	5,181,874	4,247,136

Note:—In the foregoing figures the data for Okinawa and the Izu archipelago are not included.

III. CAPITAL.

LAND.—The arable land that forms the basis of ourfar ming covers over 5 million *chō* yielding about 1,000 million *yen* worth of crops every year. Of that sum rice constitutes about 400 million *yen* in value. The value of arable land is estimated at above 7,000 million *yen*.

BUILDINGS.—Farm buildings and outhouses generally form part, in consequence of our farming system, of the farmers' dwelling-houses, and as the farming carried on is on a comparatively small scale, the capital invested on this account is not large. If, however, the dwelling houses of 5 million farming families are included, this particular capital may be estimated at about 290 million *yen*.

WORKING CAPITAL.—Apart from the capital invested in land and buildings for farming purposes, farmers require working capital existing in the following shapes:—

Consolidated { Tools and implements. / Live stock.

Floating { Manure. / Fodder.

I. TOOLS AND IMPLEMENTS.—From the limited scope of farming and also from the abundant supply of labor, farming in Japan is chiefly carried on by manual labor, partly supplemented by the use of cattle. Implements of any elaborate nature are not, therefore, employed to any great extent, and the tools used are not always made of metal. The tools and implements used in Japan may be divided into these kinds, namely, (1) those for tillage, (2) those for carriage, and those for horses and other domestic animals used for field-work.

While the tools and implements employed are so limited both in kind and in labor-saving capacity, even the number of those tools and implements possessed by our farmers is comparatively small. The farming implements generally possessed by a family cultivating 1 *chō* of wet and dry fields may be something as follows in value:—

	yen.
For field work	2.75
For use in-doors	1.10
For use in storehouse...	12.65
Total	16.50

Estimated at the foregoing rate, the value of the farming tools for the whole cultivated area of 5 million *chō* amounts to 82,500,000 *yen*. However, this estimate applies to districts where tillage is exclusively done hy manual labor, so that it is to be raised to some extent when live stock are counted in.

II. Live Stock.—The beasts used in farming are cattle and horses, and their use is greater in the southern districts where horses are generally used, and less in the northern districts in which oxen predominate. On the whole, the number of horses is larger than that of oxen. These beasts are used principally for tillage and as beasts of burden, though to some extent they are also useful, as in other countries, for supplying manure.

Though at present farming chiefly depends on human labor, it is inevitable that this state of things must change with the progress of the times and that our farmers must be prepared to make use to a greater extent of the cheaper labor supplied by machinery and beasts. The utilization of beasts in the field of the labor is all the more necessary in a hilly country like ours, where the employment of any large labor-saving machines is not easily possible. Horses and oxen are in part employed largely in agricultural operations in districts where agriculture has had a greater development than in other districts. In such go-ahead localities, every farmer keeps one or two or even three farm beasts.

At present the number of live stock in our country is out of all proportion to that in Western countries, but this state of things will be radically changed for the better at no distant time, for the public and especially the farmers have become convinced of the necessity of utilizing the labor of beasts.

III. Manure.—Night soil and stable manure play a most important part as fertilizers, though recently farmers have begun to supplement them with other kinds of fertilizers. These fertilizers

are generally of four kinds, namely, artificial fertilizers, vegetable manures, animal manures, and miscellaneous fertilizers. Of the vegetable manures, rape-seed cakes and bean-cakes are especially predominant. Next to them come animal manures, among which fish guano is most conspicuous. Artificial manures are also employed to no small extent. These fertilizers are either made at home or are imported, and of the imported fertilizers rape-seed and bean-cakes from China are the most important item both in quantity and value.

(*a*) Output of Fertilizers.—The following figures show the output of the principal fertilizers made at home in 1902 :—

Kind.	Quantity. *kwamme.*
Sulphate of lime and other artificial manures	2,379,612
Oil cakes and fish	4,429,851
Rape seed	2,555,901
Cotton seed	426,093
Others	316,218
Dried sardine	362,867
Miscellaneous fish manure	1,730,644

The demand for chemical fertilizers having grown very marked of late, the manufacture of superphosphate of lime and other phosphate manures, and nitrogenous manures has become active.

(*b*) Import of Fertilizers.—The import of fertilizers from abroad stood as follows in 1901 :—

Kind.	Quantity. *kin.*	Value. *yen.*
Ammonium sulphate	4,250,607	334,812
Bones	17,871,008	355,970
Bone dust	242,575	6,157
Dried sardine	4,946,243	153,563
Oil cakes (beans)	3,653,621 (Picul)	8,002,314
Fish	745,489 „	1,451,361
Others	416,622 „	667,035
Super-phosphates	35,304,435	603,645
Nitrates of Soda	3,468,938	216,529
Others	—	329,690
Total		12,122,076

Note :—Fractions of a *yen* are omitted.

Though the import of foreign fertilizers of all kinds has been steadily on the increase of late, in no particular kind of

fertilizer has this tendency been more striking than in oil-cakes. In 1892, the import of oil-cakes reached 616,427 piculs valued at 824,652 *yen*. In quantity the import increased five-fold during the next ten years and in value about tenfold. The bulk of the imported oil-cakes consists of bean-cakes coming from northern China, and the marvellous increase in the demand for oil-cakes proves how much our farmers have begun to appreciate the value of nitrogenous manure.

Oil-Cakes.

While the consumption of imported and home-made fertilizers is so extensive, at the same time the farmers living in remote districts depend even at present chiefly on manures made at their own homes, such as stable manure, composts, and night soil.

(*c*) Supervision of Fertilizer-business.—With the greater use of artificial fertilizers the Government perceived the necessity of providing against the dishonest practices of merchants and manufacturers and of enabling farmers to secure really valuable fertilizers. This resulted in the enforcement in December, 1899, of the Law relating to the Control of Fertilizers. It is not yet possible to ascertain how far this piece of legislation has been successful in its object, but, according to the report made by the inspecting officials whose duty is to supervise the operation of this law, the arrangement has been working satisfactorily at least during 1901 and 1902 which the said report covered.

IV. Fodder.—The comparative insignificance of stock-farming is naturally reflected in the imperfect manner of feeding live-stock, and though oats and such food are excellent for them, the food generally given by our farmer to cattle and horses consists of bran of various kinds, hay or fresh grass.

Here ends this brief description of the working funds of our farmers. Next the banking facilities existing for their benefit will be briefly described.

V. Banking Facilities for Farmers.—In Japan as elsewhere there is a tendency for the wealthier classes to expand in all spheres of activity at the expense of the poorer classes, and it naturally follows that our farmers whose means are generally very limited are in danger of having even these limited means encroached upon by manufactures or merchants of larger resources. Herein

comes the necessity to provide some banking facilities specially for the benefit of the farmers.

BANKS.—The Japan Hypothec Bank (Kangyō Ginko), the Local Hypothec Banks (Nōkō Ginkō), the Colonial Bank (Takushoku Ginkō) and the system of Credit Guilds, have all been created with the express object of satisfying this requirement. Those establishments will be briefly described in the following paragraphs, other details about them being reserved for the chapter on Finances.

The Japan Hypothec Bank.

The preamble of the law relating to this bank succinctly explains the nature of the business to be transacted by the bank. "It admits of no doubt," it states, "that the comparative lack of development of our agriculture is mainly attributable to absence of proper facilities for supplying funds on the security of real estate. Now, in order to carry to greater prosperity the agriculture of our country and to promote its productive capacity, there are many things to be undertaken, these being the reclamation of new land, the control of rivers, planting of woods, providing of better facilities of irrigation or drainage, improvement of the mode of tillage, supply of cheap fertilizers, and sundry other things. But those improvements cannot from their very nature yield returns until after the lapse of ten or a score of years, so that funds which in trade can yield returns in a very short space of time are entirely out of place in undertaking connected with farming. The funds advanced to farmers must be of longer term and at cheaper rates."

The bank was established to supply this want, as indicated by the phrase "inprovement and development of agriculture and industry," and transacts loans and payments as follows:—

LOANS.

Loans on Real Estate Loans on credit.

PAYMENTS.

Payments by instalments In less than 50 years.

Payments within fixed period { Within 5 years, the aggregate sum of loans of this kind not to exceed 1/10 of that of loans payable by instalments.

Loans on credit are made only to public bodies such as municipal corporations, towns or villages, or other bodies organized under law.

The bank principally deals, however, with loans of larger amounts, leaving those for smaller amounts to be undertaken by the Local Hypothec Banks which in organization and nature may be regarded as miniature copies of the central Hypothec Bank. The result is that although loans for such costly undertakings as the reclamation of large tracts of land or any similar work can be procured on easy terms from the Japan Hypothec Bank, the farmers of small means who constitute by far the greater majority of the farming population are practically precluded from the benefits supposed to be conferred on the farming community at large by the bank, so that the loans made by the bank generally go to manufacturers and comparatively little to agriculturists.

It ought to be added that the maximum limit of interest is to be determined with the approval of the Minister of Finance.

Local Hypothec Banks.

Started in the same year as their bigger brother and at the rate of one to each administrative locality, the Local Hypothec Banks are joint-stock companies with a capital of not less than 200,000 *yen*. As set forth in the explanation of the Law relating to Local Hypothec Banks, the latter aim at supplying funds to farmers of the middle and lower classes, and even to make loans on credit when applications come from organized bodies. These banks number 46 in all and are also subject to the supervision of the Minister of Finance, and enjoy in return no small assistance from the Treasury. The loans to be made are retricted to the following objects:—

1. Reclamation of land, irrigation, drainage, and improvement of the fertility of the soil.
2. Construction and improvement of farm-roads.
3. Settlement in newly reclaimed places.
4. Purchase of seed, young plants, manure and other materials required in agriculture and industry
5. Purchase of implements, and machines, boats, waggons and beasts for use in farming and manufacture.

6. Construction or repair of buildings for use in farming and manufacture.
7. Improvements in farming and manufacture not included in the foregoing clauses.
8. Adjustment of farm-lands.
9. Undertakings by Credit Guilds, Purchases Guilds, and Produce Guilds of unlimited liability and organized under the Industrial Guilds Law.

The loans to be made for the foregoing objects are under these conditions:—

LOANS.

Loans on Real Estate.

1.	Payments by yearly instalments ...	Within 30 years.
2.	Payments within fixed period	Within 5 years, the aggregate sum of the loans not to exceed $\frac{1}{5}$ of that of loans payable by instalments.

Loans on Credit.

1.	Payments by yearly instalments ...	Within 30 years.
2.	Payments within fixed period	Loans payable within 5 years; and loans with no such restriction.

Loans on credit and payable by instalments can be made only to municipal corporations, towns or villages, and public bodies organized under law, while loans on credit with payment within fixed period may be made only under these conditions:—

Repaid within 5 years.

1. To municipal and other civic corporations or public bodies organized under law.
2. To joint application from not less than 20 persons who are judged thoroughly trustworthy, and who are engaged in agriculture or manufacture.
3. To Credit Guilds, Purchase Guilds, and Produce Guilds of unlimited liability.

The farming classes, however, are as yet unable to enjoy to any satisfactory extent the benefit accruing from those facilities, chiefly because most of our farmers possess only limited means at their disposal, and because loans are necessarily accompanied by elaborate processes.

Herein comes the necessity of some method which will allow

even small farmers to obtain loans, and it was to supply this want that the Credit Guilds were organized, the object of their establishment being as the provisions in the Law relating to Industrial Guilds proclaim, to supply to members of the Guilds, the funds required for developing the business of the members, and also of furnishing them with means of saving. The Credit Guilds, therefore, may be compared with the People's Banks existing in Germany.

Credit Guilds.

The Credit Guilds are distinct in nature from the Central and Local Hypothec Banks and indeed from all banks, in that those guilds, like the trade unions existing in England and elsewhere, are intended to promote the common interests of the members, who while obtaining for their own use funds at low rate of interest, are also entitled to participate in the proceeds arising from the investment of the capital of the organization. The members are therefore obliged to contribute to the capital. The guilds of unlimited liability may also procure loans from the local Hypothec Banks or from other quarters.

Though only a few years have elapsed since the coming into operation of the law under which the Credit Guilds are organized, their number has already reached 300 throughout the country, and there is prospect of their growing far more numerous. It is not possible to describe here at any length the result of the working of these petty democratic banks, and it is enough to say that even in places where bankers generally exact interest at the rate of 20 per cent. or so from ordinary clients and as high as 30 to 40 per cent. from small farmers, the guild furnishes loans to its member at about 10 per cent.

The condition of affairs in Hokkaidō being distinct from that in the other parts of Japan proper, and especially owing to the abundance of waste land to be reclaimed and the comparative scantiness of the population, special banking facilities are required for expediting the exploitation of the resources of the island. To supply this want the present bank was established in the year 1899 as a joint stock company with a capital of 3 million *yen* and for the term of 50 years. This term

The Hokkaido Colonization Bank.

may be prolonged, subject to the approval of the following description :—

1. Loans on real estate payable by yearly instalments within the period of 30 years.
2. Loans on real estate payable within 5 years according to fixed period payment system.
3. Loans on shares and debentures of joint stock companies engaged in the opening up of virgin land in Hokkaidō, also to subscribe to debentures issued by such companies.
4. Loans on Hokkaidō products and advances on goods.
5. To accept deposits and custody of objects of value.
6. Loans on credit payable by yearly instalments or within fixed periods to municipal and other civic corporations established under the Hokkaidō civic corporation system and also to legally organized public bodies in Hokkaidō.

The aggregate amount to be invested in business coming under No. 3 may not exceed 1/5 of the total loans coming under Nos. 1 and 2.

The Government has subscribed about 1,000,000 *yen* to the capital of the bank, and in return for this help it regulates during the space of not more than 30 years from the establishment, the rate of interest on loans advanced on real estate and payable by yearly instalments.

IV. LABOR.

Farming Population and Households—Though the actual numbers of our farming population are not exactly known, the returns in 1901 put the total population at 28,000,000 with 4,800,000 households approximately. In other words, the farming population, constitute a little over 60 per cent. of the whole population while the number of farmers' households is a little less than 60 per cent. of the total number of households.

The farmers' households contain on an average 5.8 persons, of whom 2.5 persons may be regard as of an age capable of doing effective work. According to this estimate, the number of the farming community of an age to work may be reckoned at 22,000,000. As this number includes landowners who generally lease their land

to tenant-farmers, the actual number of people working on the farms must be somewhat less than the foregoing figures.

Tillage Land and Farmers.—At the end of 1899 the land under tillage covered altogether about 5,000,000 *cho*, of which 2,745,000 *cho* were paddy farms and 2,286,000 *cho* were upland farms. The total area being compared with the total number of farming families, the average area of tillage land corresponds to about 1 *cho* per family, while the rate per working man is only 4 *tan* approximately. It may easily be inferred therefore that tillage is mainly carried on by manual labor.

The number of working people required in preparing the land for the various crops and in gathering in those crops—working, of course, according to the methods ordinary in vogue in this country, may be roughly estimated as follows:—

WORKING PEOPLE PER "TAN."

	Men.	Women.		Men.	Women.
Rice	17	9	Rape	10	9
Barley	11	6	Beans	7	5
Wheat	11	6	Indigo	18	12
Rye	12	6	Tobacco ...	25	23
Buckwheat ..	8	3	Cotton	15	19

Demand and Supply of Labor.—According to inquires carried out in 1888 in 38 prefectures, of the agricultural families in Japan 55 per cent. cultivated less than 8 *tan* each, 30 per cent. between 8 *tan* to 1 *cho* 5 *tan*, and only 15 per cent. cultivated over 1 *cho* 5 *tan* each. From these data it is easy to see that farming on a large scale and by the employment of a large number of people is exceptional. It is only in special cases, such as in the season of sericulture or of the curing of tea, that a large number of hands is engaged. Our farmers are generally therefore their own laborers, and farm laborers who make it their regular business to work on land owned by others form an insignificant portion of the farming community. There are, it is true, a very small number of petty farmers who may be open to engagement when the work on their own field is slack. In the height of the farming season, too, such as the season of the planting or gathering

in of rice, neighbors assist each other, and thus supplement the mutual deficiency of hands. As things stand, therefore, except in the limited number of places where manufacturing is being actively carried on or where emigration either abroad or to other parts of Japan is temporarily draining the country of a large proportion of its able-bodied men, there is no likelihood, at least for the time being, of any lack of farm hands being experienced.

Condition of Engagement.—Farm laborers may, like other kinds of laborers, be divided into those who are engaged by the year and those who are engaged by the day. The farm laborers generally live in the residences of their employers who, besides supplying them with board, also give them clothes twice a year. In some cases laborers are engaged under the special condition of working one day in their employers' service, to attend the next day to their own work, thus attending to the employers' and their own work on alternate days. Lads are also engaged for the term of 5 or 7 years, and these therefore stand to their masters somewhat in the relation of apprentices to employers. During the term of contract they get their board, clothing and whatever else is a necessity of life from their employers, but very rarely do they get regular wages. Day laborers are of course engaged by the day, and their wages vary according as they bring their own food or are fed by their employers. Very rarely are day laborers contract laborers. Then some are engaged by the month or during some special period, such as the season of sericulture and other work. There are also some work-people who do job work and get paid according to the amount of the work done.

Wages.—According to the official returns, the average wages of farm laborers were as follows, in 1901.

	Males.	Females.
	sen.	*sen.*
Day laborer on farm	32.0	20.0
Day laborer in sericulture	33.0	19.5
Operative for reeling silk	—	20.0
Farm laborer engaged by the year	31.82 *yen*	17.00 *yen*

In the foregoing table, only laborers engaged by the year get board. The wages, it may be added, vary somewhat according to

districts and seasons, and while some men engaged by the year get as much as 85 *yen* in one place, in others the pay is only 7 *yen*. The day laborer employed in sericulture sometimes gets 1 *yen* a day during the height of the season.

Wages in general show a tendency to advance, as the following figures based on the wages ruling in 1887 will show, these being adopted as the standard of unit (100).

	1901.	1897.	1892.
Day farm laborer (men)	232	204	112
„ „ (women)	250	199	118
Day sericultural laborer (men)	223	181	117
„ „ „ (women)	201	176	123
Silk-reeling operative	182	166	122
Farm laborer by the year (men)	165	150	Wages in 1894 taken as standard.
„ „ „ (women)	169	156	

Wages are in most cases paid in cash, though to some extent payment is also made in food or clothing.

Migration of Farmers.—As shown in the chapter on Population the exodus of the rural population to the cities and towns has grown somewhat striking, and though this migration does not yet show itself in an absolute decrease of the rural population, there can be no doubt that if this tendency becomes aggravated, the evil of a lack of farm hands, such as that complained of in many Western countries, may take place. In Hokkaidō alone, during the 5 years ending 1901, 144,902 farmers settled there, coming from other parts of the country.

CHAPTER III.—Agricultural Products.

Introductory—Food-Stuffs—Products of special Use—Horticultural Products.

I. INTRODUCTORY.

The general tendency of our agricultural industry is to change gradually for the better, as the following data on the staples will prove.

I.

COMPARATIVE TABLE OF YEARLY ACREAGE OF STAPLE FOOD-STUFFS

(fractions below decimal represent *tan* in this and other tables).

	1877. *cho* (in thousand).	1882. *cho* (in thousand).	1887. *cho* (in thousand).	1892. *cho* (in thousand).	1897. *cho* (in thousand).	1902. *cho* (in thousand).
Ordinary rice	2,443	2,357	2,391	2,440	2,457	2,499
Glutinous rice	214	233	215	268	267	263
Upland rice	—	—	29	46	62	84
Barley	503	602	625	635	653	645
Wheat	176	373	390	434	458	476
Rye	282	488	575	649	651	682
Soja beans	188	—	466	443	435	466
Red beans...	—	—	—	—	109	129
Millet	140	—	243	239	250	226
Sorghum	—	—	27	27	27	34
Italian millet	—	—	87	90	74	70
Buckwheat	—	—	158	161	174	165
Sweet potatoes... ...	—	—	221	243	259	276
Potatoes	—	—	16	21	28	42

II.

STAPLE PRODUCTS OF SPECIAL USE.

	1887.	1892.	1897.	1902.
Cotton	98,478.9	71,431.6	44,444.0	20,700.1
Hemp	14,840.4	18,972.5	22,349.7	16,891.1
Indigo-leaves ...	50,257.4	44,049.5	50,712.3	37,193.3
Tobacco-leaves ...	21,803.5	29,059.0	31,477.5	23,946.3
Rape	167,295.1	171,795.0	154,167.0	157,045.1

It will be seen from the following table that the area of cultivation of the staples is showing on the whole a satisfactory increase. Especially is this the case with soja beans, sweet potatoes, and potatoes, among the staple food-stuffs, and hemp and tobacco among the staples for special use. The striking exception is the decrease in the area of the cotton plantations in consequence of the recent large import of foreign cotton. Our sugar industry has also suffered somewhat from foreign competition though it has lately began to recover its former prosperity, especially since our annexation of Formosa. Here are the figures showing the output of sugar.

	kwamme.
1878	7,424,819
1882	9,696,522
1887	9,904,901
1892	10,120,871
1897	9,550,489

Again, except for some staples of less importance, the yield from the same area has become increased, thanks to the better methods that have of late obtained in farming, as :—

(1). COMPARATIVE YIELD OF STAPLE FOOD-STUFFS PER *TAN*.

	1887. *koku.*	1892. *koku.*	1897. *koku.*	1902. *koku.*
Ordinary rice	—	1.526	1.209	1.328
Glutinous rice	—	1.410	1.076	1.190
Upland rice	—	0.781	0.706	0.721
Barley	—	1.042	1.255	1.262
Wheat	—	0.708	0.832	0.819
Rye	—	0.932	0.946	0.933
Soja beans	0.698	0.701	0.712	0.673
Red beans	—	—	0.566	0.548
Millet	1.058	1.260	0.957	0.885
Italian millet	1.265	1.250	1.081	0.830
Sorghum	1.005	1.022	0.941	0.805
Buckwheat	0.705	0.714	0.569	0.573
Sweet potatoes(*kwamme*)	0.253	0.234	0.256	0.257
Potatoes („)	0.172	0.184	0.202	0.128

Note :—The crop of rice in 1897 was a failure.

(2) COMPARATIVE YIELD OF STAPLES OF SPECIAL USE PER *TAN*.

	1887. *kwamme.*	1892. *kwamme.*	1897. *kwamme.*	1902. *kwamme.*
Cotton	23	18	16	16
Hemp	16	14	16	16
Indigo-leaves	31	35	38	34
Tobacco-leaves	27	26	28	35
Rape (*koku*)	0.682	0.598	0.656	0.777

(3) COMPARATIVE TABLE OF AGGREGATE OUTPUT OF FOOD-STUFFS

		1877. *koku.*	1882. *koku.*	1887. *koku.*	1892. *koku.*	1897. *koku.*	1902. *koku.*
Rice.	Ordinary	24,438	27,875	36,675	37,276	29,722	33,201
	Glutinous	2,149	2,525	3,100	3,789	2,878	3,138
	Upland...	—	—	223	363	437	606
	Total	26,587	30,401	39,999	41,429	33,039	36,947
Mugi.	Barley...	5,031	5,817	7,101	6,811	8,028	8,146
	Wheat...	1,765	2,425	3,041	3,078	3,811	3,907
	Rye	2,823	4,379	5,678	6,165	6,165	6,372
	Total	9.620	12.622	15,822	15,951	1,800	18,425
Soja beans		1,882	2,351	3,253	3,110	3,110	3,136
Red beans		—	—	—	- -	618	708
Millet...		1,318	1,633	2,574	3.016	2,395	2,003
Sorghum		170	178	274	278	260	286
Italian millet		997	1,012	1,102	1,131	806	567
Buckwheat...		527	690	1 117	1,156	990	948
Sweet potatoes (*kwam.*)		597,447	308,422	561,407	568,371	662,391	712,126
Potatoes (*kwam.*) ...		6,000	12,561	28,382	40,491	58,528	53,832

(4) COMPARATIVE TABLE OF AGGREGATE OUTPUT OF SPECIAL STAPLE CROPS.

	1887.	1892.	1897.	1902.
Cotton (*kwamme*)	22,388,590	12,584,822	7,304,253	3,321,047
Hemp („)	2,396,856	2,745,802	3,569,159	2,687,586
Indigo-leaves („) ...	15,424,412	15,447,822	19,415,593	12,495,151
Tobacco-leaves („) ...	5,987,359	7,643,203	8,871,370	8,349,678
Rape (*koku*)	1,143,035	1,026,572	1,011,004	1,110,446

In inquiring into the acreage of mulberry and tea fields which are vitally related to our two export staples, silk and tea, that of

the latter, in contrast to that of the other, shows a striking falling off. One consoling fact is that the output of tea shows an increase, due, principally, to the improved mode of curing.

TABLE SHOWING THE YEARLY AVERAGE OF MULBERRY AND TEA FIELDS.

Year.	Mulberry. *cho.*	*tan.*	Tea. *cho.*	*tan.*
1492	231,437	7	60,699	7
1897	298,203	9	58,892	1
1902	317,145	8	49,046	1

TABLE SHOWING THE YEARLY OUTPUT OF COCOONS AND TEA.

Year.	Cocoons. *koku.*	Tea. *kwamme.*
1878	942,198	2,761 522
1882	1,328,035	6,514,678
1887	1,219,060	7,011,221
1892	1,480,705	7,211,865
1897	2,121,944	8,471,956
1902	2,549,224	6,783,128

Fruit culture and gardening have made a striking advance recently.

Live stock do not yet show any marked development in numbers though there has been a great improvement in their quality. However as measures for improving both the quality of the live stock and increasing their number are now being carried out, the industry will be surely bettered in the near future. Dairy business is an industry of only recent growth, but its result is entirely satisfactory.

Below will be shown the numbers of cattle and horses during the last 24 years :—

Year.	Cattle.	Horses.
1878	1,080,886	1,545,283
1882	1,160,147	1,644,165
1887	1 020,509	1,537,606
1892	1,094,797	1,554,667
1897	1,214,159	1,592,871
1902	1,275,382	1,515,373

The gross value of the staple agricultural products as calculated on the recent market price is as follows :—

	yen.
Rice	445,439,087
"Mugi" (barley, wheat, rye)	124,064,274
Beans	35,952,282
Others	153,872,649
Straw	86,982,360
Cocoons	93,618,991
Silkworm eggs	3,844,126
Mulberry twigs and Silkworm litters...	7,953,103
Cured tea	9,037,545
Live Stock (cattle, horse, sheep, swine)	4,953,533
Slaughtered beast...	12,540,394
Cattle and horses killed by disease	256,831
Dairy products	4,128,017
Staple manure	23,672,628
Poultry and eggs	17,281,416
Total	1,023,587,239

Such is the general states of our agricultural industry, and in inquiring into the relation between supply and demand of our principal agricultural products, it is observed that though in food-stuffs the supply at home can generally satisfy the demand, this is not always the case with regard to the raw materials used for industrial purposes, as cotton, hemp, etc. These come, therefore, to no small extent from foreign countries.

II. FOOD-STUFFS.

1. Rice.—There are two varieties of rice, ordinary rice (*Oriza utilissima*, Keke) and glutinous rice (*O. glutinose*, Lour), Both are cultivated in wet and upland fields. The ordinary rice may be considered as *the* rice, for it constitutes the bulk of the output of this staple cereal. It is used as ordinary diet and also for brewing the national beverage of *sake*, while the other rice is used for making rice dumplings (*mochi*) and is therefore very limited in use.

Rice being cultivated in every place where its cultivation is

possible, from Hokkaidō in the north to Formosa in the south, the area under cultivation is immense as may be seen from the following table.

AREA (FRACTIONS BELOW DECIMAL ARE *tan*) OF CULTIVATION AND OUTPUT OF RICE.

Year.	Acreage. *cho.*	Output. *ko u.*
1892	2,760,662.1	41,429,676
1893	2,775,233.9	37,267,418
1894	2,736,494.6	41,859,047
1875	2,784 682.5	39,960.798
1896	2,792,499.4	36,240,351
1897	2,787,181.3	33,039,293
1898	2,817,624.0	47,387,666
1899	2,839,550.2	39,698,258
1900	2,828,479.3	41,466,734
1902	2,847,395.0	36,947,091

The principal centres of rice cultivation are Niigata, Hyogo, Fukuoka, Aichi, Chiba, Toyama, and Fukushima. Both the acreage and output may confidently be expected to become larger with the improvement of farming and the completion of various improvement measures.

2. "MUGI."—The *Mugi* is the staple product for upland fields as rice is for wet fields. Barley and wheat are also cultivated in wet fields as the second crop after rice. Their cultivation is universal, but that of rye is generally confined in the districts of Kinai and in the more southern places. Barley and rye are used as food-stuffs by farmers, who use them mixed with rice. They are also used to some extent as food for cattle and horses. Wheat is used in manufacturing soy and for making confectionary and various sorts of maccaroni, except buckwheat maccaroni for which buckwheat flour is used. The flour made of Japanese wheat is however not quite so good for bread and superior kinds of confectionary, and for those purposes the American flour is extensively imported. In a similar way our barley is not so well adopted for making malt for beer, and the bulk of this fermenting ingredient comes from therefore abroad. An attempt has been made with some success to cultivate in

Japan certain varieties of foreign barley. The acreage and output during the last ten years are shown below :—

Year.	"Mugi" Acreage.				Output (koku.)			
	Barley. (in thousand)	Rye. (in thousand)	Wheat. (in thousand)	Total. (in thousand)	Barley. (in thousand)	Rye. (in thousand)	Wheat. (in thousand)	Total. (in thousand)
1892	653	650	435	1,739	6,811	6,811	6,060	15,951
1893	654	654	437	1,746	7,193	6,148	3,294	16,636
1894	648	661	442	1,753	8,533	7,316	3,972	19,822
1895	654	672	447	1,774	8,541	7,107	3,978	19,537
1896	651	672	443	1,767	7,853	5,927	3,559	17,340
1897	639	651	458	1,749	8,028	6,165	3,811	18,005
1898	659	681	465	1,806	8,913	7,366	4,181	20,462
1899	657	687	465	1,809	8,512	6,682	4,141	19,335
1900	644	692	468	1,805	8,659	7,495	4,236	20,391
1902	645	476	682	1,804	8,146	3,907	6,372	18,425

The principal *mugi* districts are Hokkaidō, Saitama, Ibaragi, Aichi, Fukuoka, etc. Especially in Hokkaidō the growth of these crops is excellent, the comparative scarcity of rainfall during the ripening season being favorable for it.

3. Beans.—The use of beans is extensive in Japan. They are used as subsidiary article of diet, also as food for cattle, and as manure. A large import of beans and pancakes from China and Korea explains their extensive use in Japan. Beans of superior quality are largely grown in Hokkaidō, and they are also extensively cultivated in Saitama, Ibaragi, Nagano, Miyagi, etc. There are two principal varieties, namely soja beans and red beans, and both are cultivated during the seasons intervening between the different crops of cereals. The latter is used for making confectionary, etc.

ACREAGE AND OUTPUT.

Year.	Soja Beans.		Red Beans.	
	Acreage (*cho*).	Output (*koku*).	Acreage (*cho*).	Output (*koku*).
1894	435,852.3	2,943,478	101,428.9	560,277
1895	431,240.4	3,163,683	105,630.7	615,675
1896	440,780.2	2,999,490	103,957.7	576,724
1897	435,604 8	3,100,973	109,280.7	618,804
1898	482,044.1	3,108,708	112,313.6	654,885
1899	455,601.2	3,410,693	120,675.0	822,775
1900	457,673.7	3,562,176	122,786.1	866,448
1902	466,149.1	3,136,909	129,290.9	708,712

4. Millets, Sorghum, Buckwheat.—Millets are cultivated in the hilly districts and are used as food, being eaten mixed with rice. Sorghum is used for making dumplings and buckwheat for making maccaroni.

ACREAGE.

Year.	Millet.	Italian Millet.	Sorghum.	Buckwheat.
1894	235,164.2	84,144.4	26,286.9	172,334.0
1895	247,276.7	77,228.9	26,295.3	175,991.8
1896	248,131.7	75,124.4	28,156.8	171,215.5
1897	250,387.7	74,567.6	27,674.9	174,138.2
1898	245,641.3	77,366.3	31,683.5	180,039.6
1899	238,742.0	76,618.8	35,741.8	176,144.4
1900	245,738.6	72,538.3	34,414.1	168,996.0
1902	226.239.8	70,510.7	34,536.6	165,750.2

OUTPUT.

Year.	Millet.	Italian Millet.	Sorghum.	Buckwheat.
1894	2,144,839	999,209	250,474	1,202,372
1895	2,331,506	923,862	243,066	1,192,377
1896	2 548,458	912,154	245,734	1,090,254
1897	2,395,158	806,274	260,414	990,195
1898	2,626,588	901,472	291.852	1,192,807
1899	2,217,154	861,318	377,768	999,410
1900	2,487,187	864,601	384,452	1,285,394
1902	2,003,317	567,299	286,734	948,886

The ordinary millet is grown in larger quantities in Kyūshu than in colder districts and Italian millet is found more in the colder districts than in Kyūshu. Sorghum is chiefly grown in Hokkaidō, Aichi, Gifu, etc. and buckwheat in Kagoshima, Kanagawa, Ibaragi, Nagano, Iwate, Aomori, etc.

5. Sweet Potatoes.—This root-crop is raised as food-stuff both for men and beasts, also for brewing liquor and making starch. It is extensively grown in Kyūshu and Okinawa.

Year.	Acreage. (*cho.*)	Output. (*kwamme.*)
1894	238,942.9	495,948,701
1895	340,797.0	711,813,132
1896	255,655.2	725,942,023
1897	259,166.7	662.391,590
1898	267,252.3	716,956,146
1899	268,070.5	661,444,862
1900	271,440.4	756,935,532
1902	276,970.6	712,126,037

6. Potatoes.—Potatoes are used in Japan for food both for the men and beasts and for making liquor and starch. It is grown extensively in Hokkaidō and other districts.

Year.	Acreage. (*cho.*)	Output. (*kwamme.*)
1894	23,116.3	49,752,903
1895	23,314.4	44.273,903
1896	25,276.9	44,220,605
1897	28,996.0	58,528,287
1898	36.898.6	34,088,550
1899	37,650.6	64,594,705
1900	38,261.8	71,775,433
1902	42,139.7	53,832,873

The acreage was only 8,850 *cho* in 1882, and it reached about 42,000 in 1902. The root grown in Hokkaidō largely goes to Siberia and Australia, being of superior quality. The appearance of the potato blight in 1900 in the districts lying about Tokyo inflicted serious damage on the crop. The disease has been stamped out.

III. FARM PRODUCTS OF SPECIAL USE.

1. Rape.—Rape is grown everywhere in Japan as the second crop after rice or other crops.

The rape-seed oil was universally used formerly for purposes of illumination, and even now this is still the case in remote corners of the land. The oil is now largely exported abroad, where it used as a lubricant. The value of rape-seed cake as manure is universally appreciated and is largely used for that purpose.

This crop is cultivated in all those districts where the second crop is possible, and also in Hokkaidō.

The acreage and output are as follows:—

Year.	Acreage. (*cho.*)	Output. (*koku.*)
1894	152,400.2	1,006,581
1895	158,858.2	969,917
1896	157,738.8	971,198
1897	154,167.0	1,011,004
1898	150,825.9	1,079,594
1899	148,663.3	1,114,614
1900	153,069.5	1,193,839
1902	157,045.1	1,110,446

2. Indigo.—The indigo-plant (Polygonum tinctorium Lam.) is a special product of Shikoku, especially Tokushima perfecture where the growth of this crop was encouraged by the local Government during the pre-Restoration period. It is of the variety of Polygonum. Since the introduction from abroad of a cheaper and more convenient indigo, the sale of home-grown indigo has somewhat declined. But the native indigo still retains a fair sale owing to the permanent nature of the dye; and especially since a new mode of preparing indigo in a less costly way was discovered a few years ago by a Japanese expert, the industry has began to recover its former prosperity. In Okinawa and Formosa a special variety of indigo is produced.

The acreage and output during the last few years are as follows:—

Year.	Acreage. (*cho.*)	Output. (*kwammc.*)
1894	46,851.7	16,087,377
1895	49,079.0	17,373,344
1896	49,190.3	17,918,863
1897	50,712.3	19,415,593
1898	48,872.4	17,758,510
1899	47,824.8	17,044,410
1900	46,180.4	16,582,230
1902	37,193.3	12,495,151

The principal places of production are Tokushima, Aichi, Fukuoka, Okinawa, Saitama, Miye, etc.

3. Tobacco.—The cultivation of tobacco was formerly carried out, partly with the object of selling the leaves and partly with that of supplying tobacco for home consumption. The leaves in those days were exclusively used as cut tobacco and never as cigars or cigarettes. With the advent of the Tobacco State Monopoly in 1898, a radical change came over the economy of this crop, and the cultivation is now subject to strict official supervision, while at the same time special pains are taken for improving the quality.

Here are the figures representing the acreage and putput during the last few years :—

Year	Acreage. (*cho.*)	Output. (*kwamme.*)
1894	35,393.8	9,541,304
1895	35,135.1	8,873,911
1896	32,519.2	8,393,507
1897	31,477.5	8,871,370
1898	29,450.8	9,302,560
1899	41,647.2	10,609,531
1900	37,182.8	10,846,452
1902	23,946.3	8,349,679

Ibaragi, Tochigi, Kagoshima, Kanagawa, Fukushima, Okayama, Aichi, Hiroshima, Kumamoto, Shizuoka are the chief centres of this crop.

4. Sugar Cane.—This industry is not flourishing as it was formerly, or, more properly speaking, it has not succeeded in keeping up with the progress of the times. Its prosperity in the province of Sanuki, formerly the largest centre of production, has declined very much owing to the comparatively higher cost of production as compared with that in foreign countries. The beet-root cultivation started some time ago in Hokkaidō has not been a success. The consumption of sugar has been largely increased recently, and naturally the import of this article of diet now reaches enormous figures. However, as the industry is steadily growing extensively in Formosa, Okinawa and Kagoshima, the output of home-made sugar may soon show a striking increase. The returns for the last two years are as follows :—

Year.	Acreage. (*cho.*)	Output. (*kwamme.*)
1900	23,170.2	154,181,460
1901	24,744.7	134,278,261

5. Rushes.—The cultivation of various varieties of rushes is extensively carried on in Hiroshima, Okayama, Fukuoka, Ōita, Okinawa, Kagoshima, etc., as they are in enormous demand for the making of mats universally used in Japanese houses as carpets are in Europe and America. The export of fancy matting is also active.

6. Cotton.—Cotton is another crop that has suffered from foreign competition especially since the spinning business has grown active, for the fibres of home-grown cotton are shorter while the goods themselves are more costly than their imported rivals. These principally come from India, China, and America.

The following table will show the vicissitudes which this crop has experienced during the last eight years.

Year.	Acreage. (*cho.*)	Output. (*kwamme*).
1894	60,564.0	12,572,971
1895	55,541.0	10,488,569
1896	51,042.5	7,422,061
1897	44,444.0	7,034,253
1898	40,288.1	7,280,530
1899	33,773.2	5,231,955
1900	28,262.2	4,894,322
1902	20,700.1	3,321,047

Ōsaka, Hiroshima, Saitama, Tottori, Aichi, etc. are principal centres of produce.

7. Hemps.—The cultivation of hemp was formerly more active than it is now, for with no foreign rival to compete with it, its use for weaving fabrics, making fishing nets, etc. was extensive. The appearance of Chinese and Indian hemp in the market has considerably affected the former prosperity of the home industry, as may be seen by a glance at the following table :—

Year.	Acreage. (*cho.*)	Output. (*kwamme.*)
1894	20,948.6	3,224,094
1895	22,050.4	3,366,784
1896	22,629.2	3,285,730
1897	22,349.7	3,569,159
1898	25,188.0	3,775,917
1899	17,910.6	2,921,954
1900	18,203.0	2,652,774
1902	16,891.1	2,687,586

Hokkaidō, Tochigi, Hiroshima, Miyazaki, Shimane, etc. are the principal districts in which the cultivation of this crop is carried on.

8. Flax.—Flax fibres are largely used for weaving light stuff for summer wear, and the flax fabrics produced at Echigo and Okinawa enjoy a great reputation from former times. The cultivation is chiefly carried on in those districts as also in Yamagata, Fukushima, etc. The business is sure to attain a greater development in future.

9. Stalks for Straw Plaits.—The preparation of straw plaits in the prefectures of Tokyo and Okayama is an important minor industry on account of the work it gives to the women and children, especially since the plaits have begun to go abroad.

10. Mint.—Mint is cultivated in Yamagata, Okayama, Chiba, etc., for making essence to be used for medical and other purposes. The foreign demand has contributed to the activity of the cultivation of this subsidiary crop. Yamagata is most noted for the produce of mint.

11. Ginseng.—This medical root was cultivated formerly in such districts as Nikko, Aizu, and Izumo, but, owing to the fact that as a medicine it has lost favour among doctors of the modern school, the prosperity of the business has markedly declined. Its principal market is China, whither the roots are also imported extensively from Korea and even from America. The cultivation and the curing of the roots being rather tedious and costly work, the output is extremely limited. Fukushima, Nagano, Shimane, Tochigi, and Yamagata are the principal districts for this root.

12. Paper Mulberry Trees.—The fibres of this tree or rather shrub, are used extensively for manufacturing paper which though not very smooth, is characterized by toughness. Being a hardy plant the tree can be planted almost everywhere and mostly in waste land. Kōchi, Toyama, Yamaguchi, Ehime, Hiroshima, etc. produce large quantities.

13. "Mitsumata" (*Edgeworthia Papylifera*).—This shrub is also largely used for manufacturing paper, which is smoother though weaker in texture than that made of the other. Since the process of strengthening the texture has been devised by our Printing Bureau the paper made of the fibres of this shrub has come to be highly valued in foreign countries where it is exported to a large

extent. The shrubs are grown in shady places, and are extensively planted in Shizuoka, Yamanashi, Kōchi, Kanagawa, etc.

14. Basket-willow. — The growing of willow for making baskets, etc., is actively carried on in the province of Tajima. The process of raising the twigs is very simple, for a slip easily takes root. The cultivation of the shrubs and the industry of basket-making have been started in other places, notably in Kōchi.

IV. HORTICULTURAL PRODUCTS.

1. Fruits.—As the food-stuffs that are ordinarily used by our countrymen contain a large percentage of water, the Japanese have not up to the present used fruit much as dessert. Moreover, deterred by the imperfect facilities of transportation, the business of fruit culture was comparatively neglected. It was after the introduction of the Western style of living and the greater perfection of the means of communication that the industry attained a sudden development. The production of an excellent sort of apple in Hokkaidō and the north-eastern districts of Honshu, as also the successful growth of fruits of the orange family in Kyūshu and other warm districts, are among the results of these changes. Indeed Japan is now exporting to America and Siberia no small quantity of fruits, and there is every possibility of the business of fruit-culture growing far more prosperous, both for consumption at home and for shipment abroad.

From the geographical formation of the country, the fruits grown in Japan are of diverse kinds, and may generally be classified as follows :—

Fruits of the orange family. Mandarin oranges and other oranges, lemons, prunelo, etc.

Apples, pears, cherries, persimmons, plums, grapes, peaches, apricots, loquats, berries, bananas, pine-apples, etc.

The above are distributed geographically as follows :—

Oranges :—Wakayama, Kagoshima, Ōsaka, Yamaguchi, Shizuoka, Hyogo, Nagasaki, etc.

Apples :—Hokkaidō, Aomori, Iwate, Yamagata, Miyagi, Fukushima, etc.

Grapes :—Yamanashi, Niigata, Kanagawa, etc.

Cherries :—Hokkaidō, Akita, Yamagata, etc.

Bananas and Pine-apples :—Formosa, Luchu, and the Bonin Islands.

Pears, persimmons and the rest are grown more or less in every part of the country.

Of those fruits some are of native origin while others are imported. Apples, pears, grapes, cherries, strawberries, etc. that have been introduced from America and other countries are held in great esteem, and have practically superseded the indigenous varieties.

2. Flowers and Garden Plants.—From natural taste and traditional custom, our countrymen are very fond of flowers and ornamental plants and trees. They spare neither pains nor money on the decoration of even miniature gardens with fantastic rocks and well-shaped trees and plants, but they pride themselves most on their skill in growing dwarf trees and shrubs in pots. Nor do they care less about the cultivation of such flowering plants as crysanthemum, peony, morning-glory, etc. Perhaps we should say, however, that this business partakes somewhat of the nature of art and is not directly related to agriculture, so that it is sufficient to enumerate here the principal flowers of the season. These are :—

Spring flowers :—Cherry, peach, azalea, peonies, lilies of various kinds, pink, hydrangea, crysanthemum, etc.

Summer flowers :—Morning-glory, bush-clover, lotus, crysanthemum, poppies, etc.

Autumn flowers :—Crysanthemum, begonia, orchids, flowers of the gentian family, pink, etc.

Winter flowers :—Crysanthemum, plum, camellia, hayacinth, etc.

3. Kitchen-Gardening. — Kitchen-gardening as a businfess attained marked progress only lately and as a result of the improved facilities of communication. The business of forcing the growth of vegetables by artificial heat has become quite profitable in the suburbs of large cities. The principal vegetables raised are :—

Fruits of the gourd family, peas, beans, etc.

Roots, and bulbs, such as radishes of various kinds, carrots, potatoes, lilies, onions, etc.

Greens of sundry kinds.

Vegetables used for condiments, as ginger, horse-radish, pepper, etc.

4.—Preserved Fruits and Vegetables.—This industry is still comparatively primitive, and the cured fruits and vegetables that are prepared to a large extent are of limited kind being generally pickled plums, sugared orange-peels, jams, dried peeled-radish and edible gourd, tinned fruits and vegetables.

In view of the importance of encouraging horticulture, the Government established in the 1902 fiscal year the Experiment Horticultural Garden at Okitsu, Shizuoka-ken, to deal with the following matters:—

Matters relating to the selection and cultivation of indigenous and foreign fruits and vegetables.

Matters relating to the selection of seeds and saplings.

Matters relating to preserving and curing of fruits, etc.

Matters relating to the distribution of seeds and saplings.

As similar work has been started by not a few of local experimental stations, our horticultural business will most probably show marked improvement at no distant date.

CHAPTER IV.—Sericulture.

History—Present Condition—Egg-cards—Filature.

I. HISTORY.

Government Patronage in Former Times. — The first authentic record about the history of sericulture or the art of rearing silkworms in Japan is that in the 4th year of the reign of the Emperor Chuai (195 of the Christian era) Prince Koman, a grandson of Kosei, the 11th lineal successor of the Emperor Shih Hwang, of the Tsing dynasty (China), came over and got naturalized in Japan, bringing with him and introducing into this country the Chinese species of silk-worm, which then come to be cultivated extensively in this country. In the 14th year of the reign of the Emperor Ohjin (283 A.D.) Yu Tsu, another Chinese Prince came over and became naturalized in Japan, bringing with him a large number of his own countrymen. As these emigrants knew how to weave silk, they were distributed among different localities in the country, where they were made to teach the inhabitants the art of silk weaving. In those early days the Court took assiduous pain to encourage the industry in the country, and itself set an example in the work of planting mulberry trees and rearing the worms. It issued decrees that some of the taxes to be paid in kind should consist of silk fabrics. From this time onward, history continues to indicate the efforts which were made by succeeding Emperors to encourage the industry, efforts which resulted in the further development of the industry.

Coming down to the Japanese "Middle Ages," we find that silk raising and weaving had come to occupy the principal place among the propuctive industries of the country. Silk had come to be accepted for tributes and contributions to the Imperial Government, while silk fabrics had also come to be used in general for wearing purposes. Under the circumstances, sericulture and weaving became almost universal throughout the country. A sericultural

record compiled in 796 A.D. in the reign of the Emperor Kammu (796 A.D.) mentions the names of 36 provinces scattered over the districts of Kinai, Tōkai, Tōsan, Hokuriku, San-in, Sanyō, and Nankai. Later, about 927 A.D. in the reign of the Fmperor Daigo, the silk producing localities had come to be classified in the order of the various grades of silk they produced, there being then 12 best, 25 medium, and 11 inferior "silk provinces." During the "age of wars" (or the Japanese Dark Ages) that lasted about 700 years, commencing with 939 A.D. in the reign of the Emperor Shujaku, the raising of the worm and weaving of silk could only be carried on in secluded and out-of-the-way places which were comparatively free from the ravages of fire and sword.

With the return of peace under the Tokugawa Shogunate (1615 and downward), the industry began gradually to recover its former prosperity owing to the endeavors of such Daimios as were anxious to bring the people under them back to settled occupations in general, and who were not slow to see the importance of rehabilitating sericulture. For all that, however, the enforcement of rigid sumptuary legislation prohibiting the wearing of all silk fabrics by the common people, had the effect of throwing the industry into a sudden decline as often as recourse to such reactionary measures were made.

The Restoration and the Industry.—With the opening of the trade ports, in 1859, the market for silk and silk stuffs widened all at once, laying the foundations, so to speak, for the permanent prosperity of this industry, and the indefatigable efforts made by the Imperial Government in its endeavors to encourage the industry and secure its further progress, have been crowned with great success so that the fame of Japanese silk has become world-wide and the article commands high prices in the market of the world.

Export of Egg-cards.—Silk as an article of foreign commerce has, however, its own history of ups and downs. The prevalence of the silk-worm epidemic in Europe (soon after the opening of the country) brought about large demand for silk-worm eggs in this country. With the increase in the quantity of the eggs exported, came, however, the practice of sending out egg-cards of inferior quality or carelessly manufactured, while the discovery was made in Europe of the process of producing inoculated eggs.

Legislative measures for Protecting the interest.—These circumstances had the combined effect of gradually diminishing the exportation of Japanese silk eggs, until they entirely ceased to be sent abroad. About this time demoralization set in, also, in the manufacture of our raw silk and their buyers abroad were loud in their complaints against them. The authorities tried by legislative means to put right this evil tendency and also established at Tomioka, Joshu, a model filature, for which they engaged a French expert as superintendent. This was in 1870 and the step taken was conspicuously effective in reforming to a degree the silk industry of this country. The zeal taken by the Government in the cause of improvement by amending and reframing the laws and regulations bearing on the industry had, however, the misfortune of causing an outcry to be raised about unnecessary official interference, so that about 1877 the Government repealed all those enactments and left the people entirely free, so far as the silk industry was concerned. This turn of affair only served to benefit unscrupulous parties who fraudulently sold with impunity deteriorated goods, and the once good name of Japanese silk came to fall very low indeed abroad. Again the Government set face to check such dishonest practices and this time special care was taken to elaborate rules adapted for local condition of each sericultural district. The Department of Agriculture and Commerce, in order to seek the views of all those parties interested on the question of filature industry, held on several occasions meetings which were attended by noted sericulturists and silk manufacturers. On the strength of the report made and the answers received at these gatherings, the Government in 1885 drew up a model set of regulations for the formation of silk guilds, and distributed these regulations among the prefectural authorities, in order that the latter might each frame sets of regulations to suit the requirements of his own particular district. The consequence was the organization of guilds among those interested in the matter in each locality. In the chapter devoted to Industrial Legislature, given later on, the working of the regulations in question will be found described in some detail. In a similar way, for particulars about the silkworm egg inspection regulations and the establishment of silk conditioning houses the reader is referred to the paragraphs

specially devoted to these two subjects. It may be stated here that the Law for Encouraging the Direct Export of Raw Silk had to be repealed soon after its issue in 1897 as it was discovered that some of the provisions contained in it were at variance with the operation of the revised Treaties.

Feeding and Rearing.—A high stage of development was attained even in early days as regards the method of feeding and rearing the silkwarm, for history records that Prince Shotoku (573—622), told sericulturists that they should rear their warms just in the same way as parents nurse and bring up their infants; that they should think of their worms as they think of their own children; that in adjusting the temperature for the worms, they should judge of what suited them best, making the room neither too warm nor too cool, while giving it good ventilation; and that they should lavish the utmost care on the worms both day and night. The ideas embodied in this teaching of Prince Shōtoku are exactly what are being taught and acted upon to-day. According to "Kaiko Yōiku Tekagami" a work published in 1712, "fire-heating" was already then a common practice in sericulture in Gumma district of Jōshū, and considerable progress had apparently been made in the method of rearing the worm. In 1842 the use of the thermometer was for the first time introduced in the work of sericulture, in Date-gori in Ōshū, and the practice came afterward to be gradually followed by the worm-raisers throughout the country. This new departure forms another step forward in the progress of the industry. As for what led to the application of science on this industry, it was the World's Fair at Vienna, Austria, in 1872. The official who attended the Fair, came home more or less *au fait* of the scientific side of sericulture, as taught in Austria and Italy. Acting on the representations from these officials, the Government caused a sericultural laboratory to be established at Naitō-shinjuku, a suburb of Tokyo, in 1874, but for a certain reason the place was closed not long after. In 1884 the Government opened in Tokyo the Sangyō Shiken-ba (Silk-warm Disease Laboratory) and three years later had it removed to Nishigahara. All sorts of investigations connected with sericulture were carried out here and young men sent up by sericulturists throughout the Empire were instructed

in the art of silk-worm raising. Furthermore, the Laboratory having from time to time made public the results of its investigations the institution soon proved of very great importance to the sericultural interests of the country. About this time, those interested in the industry in the provinces of Fukushima, Gumma, Nagano and Saitama,—provinces which had had a considerable start of the others in the art of sericulture—started sending out ambulant instructors and otherwise took steps to revive and develop the industry, and these things all contributed largely towards its progress.

Present Data of the Industry.—From the above brief history of the sericultural industry in this country it will be seen to what a great extent the Imperial Court and Govenment have always encouraged and protected the industry. The following is a resumé of the condition of the industry as reduced to figures in 1902 :—

Silk-worm raisers, (No. of families engaged)		2,548,228
Egg cards (No. used)		3,894,675
Cocoons (in *koku*)		2,549,224
Egg-cards manufacturers (by family)		17,259
Silk "seeds" examined	those for manufacturing purposes—in cards	5,107,080
	those for breeding purpose—No. of moths	41,300,419
Raw silk manufacturers (No. of)		414,511
Raw silk output (in *kin*)		11,150,879
Raw silk exported (in *kin*)		8,078,166

Thus it will be seen that silk-producing forms one of the most important industries of Japan. Indeed silk comes close after rice in importance as an article of domestic production while as an article of export it has no compeer. It may even be said that silk holds the balance of Japan's foreign trade.

II. PRESENT CONDITION OF SERICULTURE.

Sericultural Policy.—It has already been shown how sericulture formed a national industry in early days, silk forming an

article of common wear, how it declined during the "Dark Ages" and also under the Tokugawa Shogunate owing to the sumptuary laws that were passed under that régime, laws which are almost by the way an exact counterpart of those passed in England about the same time, and how the industry has revived in the new era. In the latter respect the provinces of Nagano, Gumma, Fukushima and Saitama, all of which were, comparatively speaking, devoid of good paddy land, were the first to adopt sericulture as the principal industry of the inhabitants. In these provinces there were people even prior to the Restoration who had carried on the industry on an extensive scale. These people forgot, however, that the rearing business being a work of 30 or 40 days it could hardly yield income sufficient to afford them a livelihood for the whole year.

Sericulture as a Subsidiary Occupation.—These things in addition to the recent rise in wages having gradually come to be understood by those concerned, there has in late years grown up a tendency to carry on sericulture as a subsidiary occupation instead of as a main industry. Especially since the Japan-China War this tendency has gone on increasing. Sericulturists have come to see the profitableness of "farming" on a reduced scale for spring, summer, and autumn "crops," rather than undertaking the rearing all at once in spring alone. The statistical figures in this respect for 1901 were as follows:—

Season.	Cards hatched.	Cocoons obtained. (in *koku*.)
Spring crop (per raiser on average) ...	1.7	1,201
Summer „ „	1.2	648
Autumn „ „	1.5	818

Mulberry Farms.—The mulberry farm of the country is on the whole on the increase and keeps pace with the progress of the sericultural industry. The method of cultivating the plant differs according to the climatic conditions of the different localities. In the north-eastern districts where a comparatively low temperature prevails the plants are allowed to remain unpruned all the year round; but in the south-western provinces where the climatic conditions are quite the opposite, the shoots are pruned

close to the root, while in the "Kwanto" districts where the medium temperature prevails the prunning is done close to the stem, which is allowed to grow to a certain height. Besides, in the mulberry farms as such, the tree is also very largely cultivated so as to form fences, the borders, etc., of farms and farm-houses, it being estimated that the supply of mulberry leaves obtained from these sources forms about a quarter of the whole stock yearly consumed for sericultural purposes throughout the country. The following is a statistical representation of the mulberry farm industry for the ten years ending 1902 :—

Year.	Mulberry farms as such *cho.*	Mulberry trees otherwise grown and estimated *cho.*	Total *cho.*
1893	176,218.4	67,140.4	243,358.8
1894	184,772.6	69,117.2	253,889.8
1895	189,909.2	76,255.1	266,164.3
1896	208,047.8	80,889.2	288,937.0
1897	220,008.5	78,195.4	298,203.9
1898	221,603.6	82,709.1	304,312.7
1899	221,862.9	77,733.0	299,595.9
1900	222,713.1	78,058.0	300,789.1
1901	228,202.3	75,257.1	303,459.4
1902	237,215.7	79,930.1	317,145.8

Methods of Rearing.—The method of rearing the silk worm is not uniform even at present. Some do not at all use "fire heart" leaving the entire process to the conditions of the weather, this method being called the "natural method." Others would have every thing dependent on artificial heating and their method is called "the warm rearing system," while the third group would resort to both of the means above mentioned, and theirs is called the "conventional method." It goes without saying that the "natural method" was the original one, first resorted to in the earliest days of sericulture. Of this method, however, the disadvantages are that the growth of the worm is slow and that the quality of cocoons obtained are often not of good quality.

The "warm rearing system," on the other hand, accelerates the growth of the worm—in a very much less number of days than

other method—and a greater quantity of raw silk may be secured thereby, but the disadvantage of this method is that the worms are often weak in constitution and liable to produce cocoons of unexpected character. For these reasons, the method most extencively followed throughout the country at present is the "conventional."

SERICULTURAL ECONOMY.—While the economy of silk raising cannot help being affected by the fluctuations in the prices of commodities in general, as also by the condition of the cocoon crop of the year, the profit shows a gradual diminution owing to the general tendency, of late years, of the prices to rise. The following may be given as a fair estimate of the profit and loss of the industry at present:—

EXPENDITURE.

	yen.
"Seed" Eggs (1 card)	1.500
Mulberry leaves... ... { 200 *k'me.* / 10 *sen* per *k'me.* }	20.000
Workers Wages... ... { 5 men, 30 *sen* each / 30 women, 20 *sen* each }	7.500
Workers Board (12 *sen* per capita)...	4.200
Miscellaneous expenses (charcoal, tallow, oil, bobbins, etc.)	5.000
Rent { Rearing room 47 *yen* / Utensils 80 *sen* }	4.800
Interest { 7 p. c. per annum or the working capital for 2 months	.446
Total	43.446

RECEIPTS.

First class cocoons (8 *to* at 4 *yen* 50 *sen* per *to*)	36.000
Middle class cocoons (1 *to* 5 *sho* at 2 *yen* per *to*)	3.000
Third class cocoons (5 *sho*, 1 *yen* per *to*)...	.500
Ditto, punctured (1 *to* 5 *sho*, 1 *yen* 50 *sen* per *to*)	2.250
Carcass chrysalis (1 *koku* 8 *to*, 1 *yen* per *koku*)	1.800
Mulberry shoots (20 bundles, 5 *sen* per bundle)	1.000
Total	44.550
Net Profit	1.104

MARGIN OF PROFIT.—Thus calculated, the net profit dwindles down to very insignificant figure; but sericulture being, as a rule,

carried on by the farmer as a by-industry and one of the rooms of his own dwelling being employed as the rearing room, while the members of his own family attend the worms, what are given above as items of disbursement constitute in effect his own earnings of his family, with the exception of the prices paid for the "seed" eggs and mulberry leaves.

THE OUTPUT.—The quantity of cocoons obtainable differs, of course, according to the crop condition of the year; still on the whole the quantity is on the increase, owing to the progress made in the art of sericulture, the increase being especially notable in the case of autumn cocoons, as may be gathered from the following statistics for the ten years mentioned:—

COCOON CROP FOR THE WHOLE OF JAPAN.

Year.	Total. *koku.*	Spring crop. *koku.*	Summer crop. *koku.*	Autumn crop. *koku.*
1893	1,686,894	1,225,018	328,591	133,285
1894	1,797,842	1,257,836	373,996	166,010
1895	2,258,173	1,697,803	324,028	236,342
1896	1,831,378	1,384,411	255,438	197,529
1897	2,121,944	1,654,722	278,257	193,965
1898	2,027,339	1,504,351	301,393	221,565
1899	2,512,562	1,817,936	373,142	320,484
1900	2,753,903	2,029,806	377,466	346,631
1901	2,526,181	1,798,672	345,617	381,892
1902	2,549,224	1,774,936	359,772	414,516

CROP RATIO OF EACH SEASON.

Year.	Spring crop. percentage.	Summer crop. percentage.	Autumn crop. percentage.
1893	72	19	9
1894	70	21	9
1895	75	14	11
1896	75	14	11
1897	78	13	9
1898	74	15	11
1899	72	15	13
1900	74	14	12
1901	71	14	15
1902	70	14	16

Import of Chinese Cocoons.—No cocoon is at present sent abroad from Japan and the entire output is consumed at home as material for weaving silk fabrics and also for the purpose of manufacturing raw silk for exportation. At the same time from five to six hundred thousand *yen* worth of cocoons is yearly imported from China. The greater part of the importation consists of douppions, which are turned into floss silk and silk thread. The Chinese cocoons were imported as follows:—

Year.	*kin.*	Year.	*kin.*
1897...	713,929	1900...	598,999
1898...	458,617	1901...	441,371
1899...	807,762	1902...	649,013

III. EGG-CARDS MAKING.

General Remarks.—In the earlier days there were apparently no egg-cards manufacturers separate from the sericulturist, the latter doing his own work of selecting the good cocoons out of his own crop for "seeding" purposes. Nor can any exact data be given as to when the egg-card-making came to form a specialty, though from about the latter part of the 17th century the district of Uyeda in Shinshū and the various provinces in "Kwantō" and Tohoku, were already in the habit of sending out to and supplying the other parts of the country with the "egg-card." What, in modern times, brought about the sudden prosperity of this special industry, was the prevalence, as already mentioned, of the silk worm epidemic in Europe, which created a demand for Japanese "cards." It was at the time when the samurai class, deprived of their permanent pensions, took up this business of the egg-card making, as if with one accord. The subsequent decline in the exportation of the "cards," as already told, almost ruined the entire egg-card industry of the country. Since then, however, with the progress and prosperity that have attended the sericultural industry in general, the special industry in question also revived to such an extent that there is not a locality throughout the

Empire which does not possess its own egg-card manufactures, as the following table shows:—

NO. OF EGG-CARD MANUFACTURERS THROUGHOUT JAPAN.

Year.	For Spring hatching.	For Summer and Autumn hatching.
1898	16,785	7,577
1899	16,409	7,759
1900	16,324	7,587
1901	13,745	8,939
1902	12,923	4,336

THE NURSERY PROCESS.—The progress attained, especially on the scientific side, of sericulture has now come to make it an established principle among those interested in the industry that, in the cultivation of the worms for egg purposes, the temperature should not be artificially raised.

As for fighting the silk worm epidemic, Pasteur's grainage cellulaire method was improved upon and remodelled as the result of investigations carried at the Sericultural Laboratory and this improved method has since proved itself a very efficient means for the purpose for which it was devised. Then the enforcement of the Silk Worm Egg Examination Regulations proved another means of preventing the epidemic from spreading, while on the other hand the examination carried out under the Regulations had also the satisfactory result of raising the standard quality of the eggs. The following table will be interesting in this respect, 1898 being the first year in which the Regulations just mentioned were put in force.

	Spring breed.		Summer and Autumn breed.	
	Passed. percentage.	Rejected. percentage.	Passed. percentage.	Rejected. percentage.
1898	79	21	75	25
1899	82	18	75	25
1900	82	18	80	20
1901	88	12	87	13
1902	89	11	—	—

ECONOMY OF EGG-CARD MAKING.—The making of egg-cards requires the utmost skill and experience, in addition to the most painstaking care, while the manufacturer must necessarily be guided in this work by a strong sense of responsibility. A manufacturer

thus qualified would consider the following a fair estimate of the ins and outs of his business:—

DISBURSEMENTS.

	yen.
The "seeds" (100 encased moths at 3 *sen* per head)	3.000
Mulberry leaves (10 *sen* per *kwan*)	22.000
Workers hire (10 men at 30 *sen* each, 30 women at 20 *sen* each) ...	9.000
Workers board (12 *sen* a day on an average)	4.800
Rents (room 4 *yen*, utensils 86½ *sen*, apparatus 4 *yen*)	8.865
Interest on the working capital for 2 months at 7 p.c. annum) ...	522
Card-paper (60 sheets 3 *sen* each)...	1.800
Miscellaneous expenses	6.800
Total	56.787

RECEIPTS.

Proceeds (6 *to* of cocoons and 60 egg cards at 1 *yen* 20 *sen*)	72.000
Thread Cocoons (2 *to* at 3 *yen*)	6.000
Douppions (1 *to* 5 *sho* at 1 *yen* 50 *sen*)...	2.250
Third class Cocoons (5 *sho* at 12 *sen*)	.600
Punctured Cocoons (6 *to* at 1 *yen* 20 *sen*)	7.200
Carcass chrysalis (about 2 *koku* at 1 *yen*)	2.000
Waste mulberry shoots (about 22 bundles)...	1.100
Total	91.150
Net Profit	34.363

Output of "Seed-Cards."—The yearly production of "seed-cards" is also on the increase in quantity along with the progress of the sericultural industry in general, as may be seen from the following table which gives figures for the years subsequent to the enforcement of the Seed-Cards Examination Regulations:—

Year.	For Spring hatching.		For Summer and Autumn hatching.	
	For manufacturing purposes. Cards.	For reproductive purposes. Moths.	For manufacturing purposes. Cards.	For reproductive purposes. Moths.
1898	2,559,424	20,572,497	165,394	3,949,821
1899	2,877,532	21,242,568	227,836	4,579,913
1900	3,124,894	27 530,491	277.300	5 922,683
1901	3.378,718	31,239,854	2,002,622	8,141,607
1902	3,025,280	32,072,367	2,081,800	9,228,052

In the above table the figures are only for those cards officially examined and consequently those made for private use are not included.

IV. FILATURE.

First Model Filature.—The reeling of raw silk having been carried on exclusively by hand-reeling formerly, the product obtained was of the coarse kind unfit for the foreign market.

It was to obviate this defect that the Government established, as already mentioned, a model filature at Tomioka-machi in Gumma prefecture in order to encourage the improved method of machine-reeling. The example thus set before them led those interested in the industry to starting similar establishments on the factory system throughout the country. Even those who were previously contented with hand-reeling, now took up the frame-reeling and adopted the practice of selling their product jointly by unifying its quality. This was decidedly a step forward in the progress of the industry which soon came to be recognized by the farming class as an important by-business. According to the official returns for 1900, the silk turned out by machine-reeling totalled 6,193,869 *kin* against 4,779,-575 *kin* by frame-reeling. It is misleading, however, to say that filaturing constitutes a by-industry whenever it is carried on by frame-reeling, because there are establishments managed after the fully developed factory system and yet employing the frame-reeling method. While it is not yet exactly known, how many establishments of this latter kind there are in the country, the statistical returns for the year above mentioned show that in that year the country had 2,072 machine-reeling factories, employing 122,116 pans against 597 frame-reeling establishments employing 55,022 pans, the figures being in each case for factories that employ 10 workers or more.

Preservation of the Cocoons.—Owing to the fact that the climatic conditions of Japan are not like those of continental countries where a comparatively high temperature prevails the preservation of cocoons often proves to be a very difficult affair, cases of the deterioration of entire stock not being infrequent. The proper preservation of cocoons forms, therefore, a very important problem. In former days sun-drying was the only method adopted in this respect. The Tomioka Filature was the first to test the baking process

but this method, too, did not give satisfactory results, owing to the climatic peculiarities of the country. Of late, however, many and valuable inventions have been made well answering the purposes of stifling and the subsequent long preservation of cocoons so treated.

THE REELING.—There is no question that the Tomioka Filature proved to be a model establishment and that it fully satisfied the expectations that had been formed of it. It was after a European model and many of this scheme tried in this establishment and imitated at others only proved their unfitness for general adoption in this country. So there came consequently a period of continual changing from one system to another, a conspicuous instance of this kind being the adoptation to a very large extent of the "Kennel" method in place of the "Champon" system and also of "double" instead of "direct" reeling. Very significant progress has also been made in the art of reeling itself, since the opening of the model institution, the following figures furnishing eloquent proof of this statement.

AVERAGE PRODUCE PER PAN.

Year.	Machine reel.	Frame reel.
1900	48 *kin*	27
1896	39 „	19
1893	39 „	22
Increase in 1900 as against 1896 ...	9	8

FILATURING ECONOMY.—In this as in all other industries, the skill of the workers and the cost of the raw stock count for every thing. It is undeniable, however, that the recent general rise in the prices of commodities has also tended to increase the cost of production in filaturing. Below is a table showing the average cost of production per 100 *kin* of raw silk.

Year.	Machine.	Frame.	Average.
	yen.	*yen.*	*yen.*
1900	156	129	143
1896	126	108	117
1893	110	82	96
Increase in 1900 as against 1896 ...	30	21	26

It may be interesting to give in this connection a detailed list of the item of expenditure and receipt in filaturing. The following is such a list, the calculations being made on the basis of 100 *kin* :—

MACHINE-REELING.

EXPENDITURE.

	yen.
Cost of cocoons—16 *koku*	640.000
Girls' wages—267 reelers each 6 *sho* of cocoons and 10 others doing the rest of the work	41.550
Girls board	27.700
Employees salaries...	14.750
Packing expense	1.000
Fuel—7,500 *kin* of coal...	17.250
Miscellaneous expenses...	5.000
Freightage—From Jōshū to Yokohama	1.000
Insurance 1/10 p.c....	.820
Commission—1 p.c.	8.500
Jinrikisha fare...	.200
Weighing fee	1.000
Draft discount—5/10 p.c.	4.000
Interest on invested capital of say 12,000 *yen* at 10 p.c., the total yearly production being 3,000 *kin*.	40.000
Working capital of say 760 *yen* 50 *sen* for 6 months at 10 p.c. a year	39.000
Total	842.548

RECEIPT.

Proceeds from sale of raw silk	850.000
„ „ Noshi and other by-products	20.000
Other incidental yield	1.000
Total	871,000
Net profit	28.452

FRAME-REELING.

DISBURSEMENTS.

	yen.
Cost of cocoons—16 *koku*	640.000
Girls wages	57.000
Salaries	12.000
Packing expenses	1.000
Fuels	12.000
Miscellaneous expenses...	3.000
Insurance—From Jōshū to Yokohama	1.000
Commission—1 per cent.	7.850
Jinrikisha fare...	.200
Weighing fee	1.000
Draft discount 5/10 p. c.	3.925
Interest on invested capital of say 2,050 *yen*	20.500
Interest on invested capital of say 739 *yen* 70 *sen*	36.984
Total	797.744

RECEIPTS.

Proceed from sale of raw silk	785.000
„ „ „ Noshi and other by-products	17.000
Other miscellaneous income...	1.000
Total	803.000
Net profit	5.356

ANNUAL OUTPUT AND EXPORT.—While it is unavoidable that there should be differences in the amount of annual production of raw silk owing to differences in "crop" condition and also in those of proceed thereform according to market condition, there is no question that on the whole the amounts are on the increase, being encouraged no doubt by the growth of the export trade, as the following table will show:—

Year.	Amount produced. in *kin.*	Amount exported. in *kin.*	Amount exported. in *yen.*
1859	—	487,625	—
1860	—	812,780	—
1861	—	922,424	—
1862	—	2,414,914	—
1863	—	1,294,719	—
1864	—	1,348,164	—
1865	—	941,602	—
1866	—	1,101,546	—
1867	—	1,000,117	—
1868	—	1,123,951	—
1869	—	726,046	5,720,182
1870	—	683,362	4,278,752
1871	—	1,323,435	8,004,144
1872	—	895,500	5,205,237
1873	—	1,202,134	7,208,421
1874	—	979,193	5,302,039
1875	—	1,181,387	5,424,916
1876	—	1,864,249	13,197,921
1877	—	1,723,004	9,626,956
1878	2,266,294	1,451,235	7,889,446
1879	2,782,375	1,638,198	9,734,534
1880	3,331,044	1,461,619	8,606,867
1881	2,881,850	1,801,181	10,641,310
1882	2,850,806	2,884,068	16,232,150

Year.	Amount produced. in *kin.*	Amount exported. in *kin.*	Amount exported. in *yen.*
1883	2,885,900	3,121,975	16,183,549
1884	4,492,356	2,098,398	11,007,172
1885	3,174,925	2,457,925	13,033,872
1886	4,592,525	2,635,294	17,321,361
1887	5,124,788	3,103,584	19,280,002
1888	4,148,891	4,677,708	25,916,860
1889	5,511,041	4,126,741	26,616,541
1890	5,425,425	2,110,315	13,859,339
1891	6,799,850	5,325,148	29,356,339
1892	6,850,550	5,406,856	36,299,744
1893	7,709,713	3,712,213	28,167,411
1894	8,104,894	5,484,059	39,353,156
1895	10,020,694	5,810,046	47,866,257
1896	9,017,000	3,918,994	28,830,600
1897	9,609,756	6,919,861	55,630,460
1898	9,248,416	4,837,329	42,047,411
1899	10,964,013	5,946,911	62,627,721
1900	10,973,444	4,630,903	44,657,029
1901	10,972,981	8,697,706	74,667,331
1902	11,158,819	8,078,166	76,859,478

DEMAND AND SUPPLY.—The United States of America is decidedly the best customer of Japanese raw silk, that country taking 50 per cent. or more of the whole amount exported. Next comes France, and then Italy. Other countries buy comparatively little of Japan. The destinations of Japanese raw silk after its exportation may be tabulated as below:—

Destinations.	1898. *kin.*	1899 *kin.*	1900. *kin.*	1901. *kin.*	1902. *kin.*
U. S. A.	2,911,240	3,820,477	2,642,918	5,142,376	4,878,494
France	1,630,654	1,803,464	1,200,838	2,035,818	1,575,251
Italy	218,652	260,298	669,484	1,341,913	1,290,480
England	36,491	28,663	45,658	17,105	46,413
Switzerland	625	3,677	1,029	7,579	61.569
Hongkong	—	—	2,218	—	—
Canada...	—	—	18,912	62,113	115,170
Russia	39,663	30,337	49,846	82,234	87,758
Other countries ...	4	2	1	8,568	186
Total	4,837,329	5,946,611	4,630,903	8,697,706	8,078,166

Besides the above, waste raw silk is annually exported to the extent of about four million *yen* in value.

It may be noted here, that, the amount of Chinese raw silk and wild silk cocoons has considerably increased of late the importation now aggregating to the value of about one million *yen* a year. The Chinese raw silk is, as compared with the Japanese article, inferior in quality, but its price is lower and it is used for weaving fabrics of home consumption. For a similar reason Tussah silk yarns are imported. The following gives the amounts of the importation from China :—

Year.	Chinese raw silk. *kin.*	Tussah silk yarns. *kin.*
1898	7,606	15,760
1899	168,839	151,850
1900	3,288	148,237
1901	631	213,018
1902	50	418,463

The statistics above given conclusively prove that the future of sericulture in Japan in all its branches is brighter than ever. While now and again one hears of the complaints that the increase in wages is eating up all the profit formerly obtained from the industry, it seems nevertheless almost certain that better economy and more business-like methods in carrying on the industry will soon remove all these causes for complaint.

CHAPTER V—Tea-Manufacturing.

History—Present Condition of the Industry—Kinds of Tea—Market.

I. HISTORY.

Introduction of Tea-Shrubs from China.—The plantation of the tea-shrubs in Japan first took place in the year 805 when Denkyo Daishi who had crossed over to China for the purpose of completing his study of Buddhism, came home with some tea-shrubs and planted them in a place called Daino-fumoto in the province of Omi. In the following year the famous Kōbō Daishi returned from China also with a supply of tea-plants. In addition to this he also brought with him the art, which he had learned on the continent, of preparing tea-leaves for the purposes for which they are now used. Subsequently in 815 the Imperial Court ordered the plantation of tea-shrubs in the provinces round about Kyoto, Tanba and Harima and also ordered these provinces to send an annual tribute of manufactured leaves to the Court. This was the beginning of tea planting and manufacturing in Japan. The use of tea as a beverage, dates further back, however, by at least 76 years, for the Court calendar of those days already makes mention of the celebrated tea-ceremony. The latter fact would show that tea was already used at that time among the royalty and nobles. On the other hand, the Buddhist priests have always made use brewed tea as a necessary article of their ritual and it is more than probable that the subsequent popular use of this particular kind of beverage originated in this religious practice.

The method of tea making as taught of Kōbō Daishi on his return from China; was to pick the tea twigs and leaves, steam them and then pound them with a pestle and mortar,

afterward making the crushed matter thus obtained into balls. The balls were dried over a fire and then ground into a powder, which was thrown into hot water and stirred up, before it was drunk. That the grinding stones were in use in those days is evident from the fact that there is still to be seen among the old relics, preserved in the Hōshōji Temple of Yamato, a set of these stones which Kōbō Daishi is said to have brought with him from China.

In subsequent years the Imperial Court encouraged the industry of tea plantation laid out within its "forbidden" precincts.

The above facts relate only, it will be seen, to the earliest period of tea-making in Japan. For 400 years or so after its introduction, the use of tea as a beverage was confined to nobles and to the religious orders.

Another Buddhist priest named Eisei-Jenshi who returned home from China in 1191 brought with him a quantity of seeds of tea-plant and planted them on Mt. Sefuri, Chikuzen. He also introduced a new mode of curing, that is to say, pan-curing. His disciple Meikei took a quantity of the seeds from the Sefuri plot and planted them at Togano and Uji, thus laying the foundation of the now flourishing tea industry of Uji.

Tea in Social Etiquette.—The planting of tea and the custom of using this beverage spread apace. The custom was still, however, as it was for a long time after its introduction to Europe, aristocratic, and was practically confined to the wealthier classes and to the priests. In course of time the custom of tea-drinking began to wear an aspect of something like a ceremony, with nice and strict canons of etiquette to surround it. It was during the time of the Shogun Yoshimitsu of the Ashikaga Regency that these canons were nicely elaborated by a man named Shuko, and thus the so-called tea-ceremony were first drawn up in a regular form. A special class of persons whose business it was to teach the details of this ceremony next began to make their appearance, and these persons, called "masters of tea-ceremony," occupied an important place in the estimation of the public. In fact all matters relating to social etiquette were practically in charge of these "tea-masters,"

and every feudal baron kept in his service one or more such "masters" upon whom he bestwed a regular salary. Thus the tea-ceremony finally came to play an important part in society as a regulator of social etiquette and as a means of promoting friendship. A big tea-ceremony meeting was a favorite occasion for bringing about meetings and reunions among warriors, courtiers, and other people in the higher ranks of society, and it can not be denied that the strict and sometimes graceful rules enforced by the ceremony tended very much to soften the blunt and rough manners of the warriors inured to hardships and horrors of battles that occurred very frequently during the later period of the Ashikaga Regency. Nobunaga who succeeded in suppressing the civil strife and Hideyoshi who rose after Nobunaga were both great patrons of the tea cult. No money was spared on the vessels used for the ceremonials, and porcelain bowls and other earthenwares were specially sent for to Luzon, Cochin-China, and China. Hideyoshi very often gave such vessels to his captains when he wished to reward them for distinguished services and these were afterwards preserved as valuable heirlooms in the houses of the captains.

As might have been expected, the tea-ceremony attained great popularity on the advent of the Tokugawa Regency, and during the period of peace lasting for about three centuries which prevailed under that régime.

Curing Process.—Only two kinds of tea were in use till the time of the Tokugawa, namely the pounded tea and pan-fired tea. It was not till 1738 that a new mode of curing tea was invented by a manufacturer of Yamashiro named Sannozo Nagatani. This mode, called at that time "green-curing," consisted in first steaming the leaves, rolling them, and then drying them at a fire, in such a way as to preserve the natural green hue of the leaves. This system of curing, a forerunner of the present Uji system, was received with favor throughout the tea-producing districts. The Gyokuro tea, a modified from of the "green-cured" tea, was first manufactured at Uji in 1835.

It will thus be seen that the original mode of curing tea-leaves consisted in steaming them, then pounding them, and finally rolling them into balls, after which the pan-firing process came into vogue.

Next we have the powdered tea method, and then the Uji "green-curing," and lastly the Gyokuro-tea style. The black tea is the latest innovation, dating only about 27 years back.

First Expot of Japanese Tea.—Tea was first exported from Japan about 1750 by some Chinese merchants of Nagasaki. The opening of Yokohama and Kobe to foreign commerce inaugurated a new epoch for the export of our tea which found in those two new open ports and in Nagasaki reguler outlet to foreign markets. At first our tea went both to England and America, but, on the development of the tea industry in Ceylon and India, England ceased to patronize the Japanese produce, so that from about 1871 America has been our principal customer.

Vicissitudes of the Industry.—Just as in the case of silk and other staple export commodities, the history of the export of tea is checkered, consisting as it does of ups and downs, the production and export of tea of bad quality, the inevitable decline, in consequence, of the volume of export, the holding of conferences by all those concerned in the industry to make arrangements calculated to provide against this evil, and then the creation of guilds for the purpose. Further we see the appearance of companies formed with the object of undertaking the export of the goods direct to foreign consumers and thus dispensing with the services of the middle-men, that is of the foreign merchants resident amongst us, the invariable collapse of such companies, the dispatches both of the Government and by the guilds of a number of experts and merchants to Ceylon, China and other places to inspect the condition of the tea manafacture and the tea market in those countries.

The World's Fair at Chicago supplied an important occasion for advertising abroad the merit of our leaves, and the strenuous efforts made by our manufacturers and merchants at that time were attended by a satisfactory result. In other words, the popularity of what may be called our national beverage in the United States and Canada was greatly increased. Meanwhile the arrangements for checking the appearance on the market of inferior tea and for the direct exportation of tea by our own merchants had been completed. These laudable and profitable exertions of our manufacturers and merchants were so much appreciated by the Government that in

1897 it granted for the time being a state aid of 70,000 *yen* a year towards the funds for expanding the foreign market of our tea. In compliance with the instruction of the Government the Central Tea Guild maintains at present branch offices in the United States, Canada, Siberia, France etc., and causes them to take charge of the business of investigating the state of the market in those places and of taking steps to expand the market for the goods.

Direct Export.—This aggressive movement on the part of our tea-manufacturers and merchants may well be regarded as constituting a new epoch in the history of our tea industry, for the export business had remained almost exclusively in the hands of resident foreigners during the period of over forty years after the opening of our country to foreign trade in modern times. These merchants re-cured the goods before exporting it, and the men and women employed by them both in Yokohama and Kobe in the height of the tea season numbered or used to number tens of thousands. The re-curing process is now carried on extensively in several tea-producing districts, and the Japanese establishments which are engaged in re-curing and in direct exporting now number more than eleven.

Curing Machines.—The process of re-curing and of manufacture has also been considerably simplified by the invention of several machines, among which may be mentioned those invented by Gensaku Harazaki, Kenzō Takabayashi, Hatsutarō Mochizuki, Saikichi Kamo, Kiichirō Usui, Hatsujirō Nakatsu and others. The tea-manufacturing machines, large and small, number over 1,000, and these enable our manufacturers to produce their goods with less cost and labor than before. Nor does the Government neglect to devise measures for promoting the industry. It has for instance created since 1896 an experimental tea manufacturing establishment at Nishigahara, where all matters relating to the planting of the shrub and the manufacture of tea, as also to the improvement of tea-manufacturing machines are attended to.

II. PRESENT CONDITION OF THE INDUSTRY.

Area under Cultivation.—As in the case of the mulberry-plant, the cultivation of the tea-plant is carried out on large

farms or rather plantations specially devoted to the purpose as well as in spare spaces about homesteads and in other kinds of land. The average under cultivation during the last seven years is given below.

Year.	Tea fields. *cho.*	Tea grown in other lands. (estimates.) *cho.*	Total. *cho.*
1896	38,810.1	20,669.0	59,479.1
1897	38,152.5	20,739.6	58,892.1
1898	37,483.3	21,164.7	58,648.0
1899	37,917.5	19,965.6	57,883.1
1900	31,889.5	17,376.6	49,266.1
1901	31,899.2	16,949.0	48,848.2
1902	32,111.5	16,934.6	49,046.1

Shizuoka heads the list of tea-producing districts in the extent of acreage, and contains in fact a little over one-fifth of the whole acreage under tea in this country. Then follow Miye, Ibaragi, Kyoto, Kumamoto, and Fukuoka.

KINDS OF TEA.—Of the different kinds of tea manufactured in Japan, the *Sen-cha* (ordinary green tea) and the *Ban-cha* surpass all the others in output and value, and they are followed in this respect by the *Gyokuro*-tea and black tea. The output of powdered tea, Olong tea and brick tea is far below that of those mentioned above. The output of powdered tea is particularly conspicuous in gradual falling-off. Details as to the output of the different teas are as follows:—

OUTPUT OF TEAS DURING THE LAST 10 YEARS.

Year.	Powdered. *kwam.*	*Gyokuro.* *kwam.*	*Sen-cha.* *kwam.*	Black. *kwam.*	Olong. *kwam.*	*Ban-cha.* *kwam.*	Total. *kwam.*
1893	6,397	71,355	5,129,446	36,151	8,540	2,388,479	7,640,368
1894	4,435	105,402	5,144,733	48,661	17,244	2,562,757	7,883,232
1895	5,523	91,206	6,077,186	53,401	13,556	2,358,008	8,598,880
1896	4,550	70,340	5,974,209	37,894	16,848	2,396,552	8,500,393
1897	4,304	64,837	5,999,393	30,283	15,880	2,357,259	8,471,956
1898	4,219	70,586	5,919,738	36,069	18,911	2,392,195	8,441,718
1899	4,239	91,570	4,789,164	33,040	11,290	2,589,581	7,518,884
1900	4,325	81,438	4,895,684	35,862	9,365	2,585,514	7,612,881
1901	4,237	75,494	4,637,790	38,310	21,384	2,073,282	6,850,497
1902	4,210	61,171	4,596,265	30,981	24,512	2,066,289	6,783,428

The *Gyokuro*-tea is mostly produced in Kyoto and Niigata, black tea in Kumamoto, and other places in Kyūshu, *Ban-cha* in Shizuoka.

Market.—The home consumption of tea comprises the whole of the powdered tea and *Gyokuro* tea, and some of the *Sen-cha*, *Ban-cha*, etc. The *Sen-cha*, *Ban-cha* and black tea constitute the bulk of the teas which go abroad. The United States and Canada take most of the teas shipped abroad, while Russian Siberia takes a small quantity of black tea and brick tea. The distribution of our teas as to consumption is as follows:—

EXPORT AND AMOUNT OF CONSUMPTION AT HOME.

	Total output *kin.*	Import *kin.*	Total *kin.*	Export *kin.*	Home consumption *kin.*
1893	47,752,300	57,904	47,810,204	36 443,555	11,366,649
1894	49,270,200	52,186	49,322,386	37,453,587	11,868,799
1895	53,743,000	66,686	53,809,686	38,826,661	14,983 025
1896	53,127,456	97,643	53,222,099	33,241,472	19,980,627
1897	52,949,725	119,617	53,069,342	32,632,683	20,436,659
1898	52,760,738	145,953	52,906,691	30,826,632	22,080,059
1899	46,993,025	51,933	47,044,958	34 731,644	12,313 314
1900	47,576,175	113,985	47,690,110	32,240,147	15,449,963
1901	42,879,444	117,518	42,996,962	32,248,471	10,748,491
1902	42,394,550	125,396	42,519,946	32,759,580	9,760,366

It may be noted that the teas imported come almost exclusively from China.

The ratio of distribution per 1000 as to value of the teas exported was as follows in 1900:—

	Green tea. (*Sen-cha* and *Ban-cha*.)	Black tea.
United States	781	960
Canada	203	4
Siberia	—	13
Others	16	23
Total	1,000	1,000

Prospect of the Industry.—As may be seen from the tables showing the output and the amount of export, the progress

of the industry is not quite satisfactory; on the contrary there are even signs of a decline, principally on account of the increase in the cost of production and the appearance of rivals in the foreign markets. In some districts the cultivation of tea-plants is being superseded by that of other plants, while in some others the cultivation of tea-plants is beginning to become active. Judged from the state of affairs, more or less changes may take place in a few years in the *locale* of the tea districts.

The Government is, as has been pointed out above, doing its best to promote the industry, and besides granting a subsidy is adopting suitable measures for the improvements of the quality, for providing against the deterioration of the tea, and for keeping those interested in the industry well-posted with regard to the state of markets in foreign countries. The local authorities follow the example set by the central Government and are supplementing the efforts of tea-growers and manufacturers to push the industry to the state of greater prosperity.

CHAPTER VI.—Institutions for Encouraging Agriculture.

Agricultural Experiment Stations—Agricultural Institutions—Ambulant Lecturers on Agriculture—Sericulture Institutes—Silk Conditioning House—Imperial Establishments of Tea Industry—Animal Epidemic Laboratory—State Cattle Breeding-Farms—State Horse Studs and Depots.

I. AGRICULTURAL EXPERIMENT STATIONS.

General Remarks.—About thirty years ago Japan made a first attempt to improve agriculture by scientific methods. For this purpose the Government established many experimental farms, and started trial work on cattle breeding and various other branches of agriculture, at the same time importing from abroad new varieties of domestic animals as well as grains, implements etc. Most of these attempts ended in failure, owing to the fact that there were not at that time a sufficient number of trained men to take charge of this innovation.

Those failures, however, were not in vain, for they taught a valuable lesson to our authorities and caused them to turn their attention to the business of training men qualified to undertake the work. By 1886 the Department of Agriculture and Commerce obtained a sufficient number of the graduates of the then Tokyo Agricultural College, and they were made to act as pioneers of the new movement. These young agriculturists as first addressed themselves to the task of carrying out easy and simple experiments with the help of farmers. The result obtained was quite satisfactory, and was indeed of such description as to deeply impress those farmers with the importance of scientific knowledge of farming, as the three essential ingredients of fertilizers, the selection of seeds and so forth. In

1890 this experimental work was elevated to the dignity of a purely Government enterprise and in consequence an office with experimental land measuring about four acres attached to it was established at Nishigahara near Tokyo. This was the embryo of the present Imperial Agricultural Experiment Station. In the course of time the real value of this enterprise began to be fully appreciated by the general public, more especially from those who were directly interested in agricultural work. In 1893 an Imperial Ordinance relating to the organization of the Imperial Agricultural Experiment Station in Japan was promulgated, and placed this institution on a firm basis with all the necessary expenses yearly appropriated with the consent of the Imperial Diet. At the same time six branch stations were instituted, their sites being selected with due regard to climate, soil, etc. In 1896 three more branch stations were added to the list, thus bringing the total to ten; namely, one main station and nine branch stations, the latter located in the prefectures of Osaka, Miyagi, Ishikawa, Tokushima, Hiroshima, Kumamoto, Shimane, Aichi and Akita.

Those branch stations in the early stage of their existence, had to devote themselves mainly to the work of carrying out simple experiments easily admitting of practical application by our farmers whose scientific knowledge on agriculture was yet poor, while the facilities they had at their disposal of conducting field experiments either individually or by combined efforts were practically absent. In undertaking such experiments the stations had also an eye to induce the farmers to establish in their own respective districts similar organs for promoting the development of agriculture.

During the last ten years the main and branch stations have attended with greater zeal to this important duty of guiding the farmers in the art and science of agriculture. Meanwhile the Government elaborated a measure which had a powerful effect of stimulating our people towards establishing local experimental stations, for in that measure the Government pledged itself to grant every year State aid within the limit of 150,000 *yen* in all. Roused by those circumstances most of the prefectures emulated each other in organizing experimental stations, till at present these number 38 throughout the country. The main station was now in the position to make a new departure

in the mode of conducting scientific researches and investigations, and to attend to it on a larger scale than before. In view thereof, in 1899 it divided its work into nine sections, viz., agriculture, agricultural chemistry, entomology, vegetable pathology, tobacco culture, horticulture, stock-breeding, and report and general affairs.

In 1903 it was decided to reduce the number of the stations maintained by the central Government and to transfer them to the control of the respective prefectures wherein they were located, so that those stations may more satisfactorily fulfill the local requirements, while the stations continuing as Government establishments may be enabled to concentrate their work of carrying on investigations capable of wider applications than before. In pursuance of this decision six branch stations were abolished, or rather transferred to the prefectural control in that year, i.e., those in Miyagi, Ishikawa, Tokushima, Hiroshima, Shimane and Aichi. Thus at present one main station at Nishigahara and three branches in the prefectures of Kumamoto, Ōsaka and Akita are maintained by the Government.

THE WORK CARRIED OUT.—As mentioned in the preceding paragraph, the work of the main station is subdivided into nine sections, which attend to the following lines of work :—

SECTION OF AGRICULTURE :—

1. Cultivation of crops.
2. Selection of the different varieties of crops.
3. Rearing and breeding of agricultural plants.
4. Researches in vegetable physiology.
5. Researches in the relation between crops and climate, soil and manure.
6. Examination of seeds and plants.
7. Farm implements and tools, and the amelioration of soil.
8. Distribution of seeds and seed-plants.

SECTION OF AGRICULTURAL CHEMISTRY.—This section is to deal with,

1. Chemical investigations in crops and farm products.
2. Experiments on manure.
3. Micro-organisms present in soils and manures.
4. Agricultural technology.
5. Examination of soils and the crops suitable to them.

6. Investigating and surveying mineral fertilizer deposits.
7. Researches on the productive power of various kinds of soils.

Section of Entomology :—This deals with,

1. Treatment of insect pests and utilization of useful insects.
2. Classification and life history of both injurious and useful insects, and their geographical distribution.

Section of Vegetable Pathology :—This section deals with,

1. Prophylactics and therapeutics of plant diseases caused by fungii and bacteria.
2. Application of pathogenic fungii and bacteria for the destruction of injurious insects.
3. Examination of and experiments on parasiticides.

Section of Tobacco :—This section deals with,

1. Selection and cultivation of tobacco.
2. Researches on the relation between the quality of tobacco and climate, soil, fertilizers, etc.
3. Investigation on the curing, fermentation and preservation of tobacco-leaf, and on its manufacture.

Section of Horticulture :—This section deals with,

1. Selection, propagation and cultivation of fruits and vegetables.
2. Cross-breeding of horticultural plants.
3. Harvesting and preservation of fruits and vegetables.
4. Forcing of horticultural plants.
5. Distribution of seeds and seed-plants.

Section of Stock-breeding :—This section deals with,

1. Researches on natural and cultivated fodder-plants.
2. Feeding and management of domestic animals.
3. Zootechnics.
4. Distribution of seeds of fodder-plants.

Section of Report and Section of General affairs :—These two sections deal with matters relating to compilation and publication of reports and library and matters relating to the general and financial affairs respectively of the main station.

Branch stations.—The branch stations attend to one or more subjects of technical work. Thus the Kinai Branch situated in Osaka prefecture is devoted to agricultural work, the Kyūshu Branch in Kumamoto prefecture undertakes the work relating to

entomology and vegetable pathology, and lastly the Riku-u Branch situated in Akita prefecture takes charge of the work of stock-breeding. At the same time both the main and branch stations carry on the following lines of work :—

1. Inspection of fertilizers.
2. Chemical analysis made at the request of the public.
3. Supervision of experiments entrusted to farmers.
4. Information given to inquiries coming from the public.
5. Lectures held at the request of the public.
6. Researches on special agricultural problems.

PRINCIPAL ESSAYS PUBLISHED IN THE REPORTS.—The principal essays heretofore published in the reports compiled by the main station are as follows :—

I.—CLIMATE, SOIL AND WATER.

1. On the seed-exchange of rice.
2. On the influence of sun's rays on the growth of rice-plant.
3. Climatological researches on rice-plant.
4. On the burning of soil.
5. Advantage of periodic drying of paddy-field.
6. On the deep cultivation of paddy-field.
7. On the influence of moisture on the growth of plants.
8. On the volume of irrigation water required in one *tan* of paddy-field.
9. Average quantity of water absorbed and evaporated by one bunch of the rice-plant during the several stages of its growth.
10. On the proper time of discharging the irrigation water from paddy-field.
11. On ammonical springs.
12. On irrigating the paddy-field throughout the winter.

II. –CULTIVATION.

1. On selecting the varieties of upland-rice.
2. On selecting the varieties of rice-plant.
3. On the reproductive power of barley and wheat seed with special reference to weight and specific gravity.

4. On seed selection.
5. On the relation between the reproductive power of the seed of Indian millet and its size and specific weight.
6. The distribution of larger seeds on the ear of Indian millet and its practical application in seed selection.
7. Relation between the germinative power and the color of indigo seed (Indigofera tinctoria, L.).
8. Relation between the germinative power and the color of "Genge" seed (Astragalus cinicus, L.).
9. The relative vitality and reproductive power of fresh and old rice grains kept in two different places.
10. On the advantages of the proper selection of seeds with regard to the mode of cultivation or manuring.
11. Reproductive power of rice and barley in the various stages of their ripening.
12. Tar as prevention of injury on seeds by birds.
13. On the quantity of seed required in the late sowing of rice.
14. On Japanese indigo (Polygonum tinctorium, Lout).
15. On the proper time for sowing barley, wheat and naked barley in Japan.
16. On the proper time of rice-transplantation.
17. Cultivation of soja bean (Soja hispida, Maxim) as green manure.
18. On the proper time of applying night soil as manure to wheat or barley crop in districts subjected to heavy snowfall.
19. On the development of root.
20. On cross hybridation.
21. On the superior varieties of principal crops in Japan.
22. On the characteristic qualities of the different varieties of soja beans.
23. Improvements of nursery plot of rice in the north-eastern districts of the Main Island.
24. On the characteristic qualities of the different varieties of rice-plant with special reference to mode of transplantation.
25. Experiments on the number of bunches of rice-plant in a given area of land and the number of plantlets in each bunch.

26. On the growth of paddy and upland rice.
27. Injurious effect of shaking rice-plant in the flowering season.
28. Injurious effect of steeping rice-plant under water.
29. Transplantation of sweet potatoe (Iponaea batata, Lam.) and the part of the shoots best suited for young sets.
30. On the direction of ridges for a second crop in paddy-field.
31. On the characteristic qualities of the different varieties of rice-plant.
32. On the valuation and preservation of harvested crops.
33. Experiments on the storing of rice grains.
34. Relation between the quality of rice and its market price.
35. Cultivation of Japanese indigo in the province of Awa.
36. Cultivation of Mentha (Mentha aroensis, L.) in Yamagata-ken.
37. Cultivation of hemp (Cannobis sativa, L.) in the province of Shimotsuke.
38. Cultivation and preparation of ginseng (Aralia quinquefolia, A. Gr) in the province of Izumo.
39. On Indigo (Indigofera tinctoria, L.)
40. Cultivation of "I-gusa" (Juncus effusus, L.) in Hiroshima-ken and Okayama-ken.
41. Apple plantation in Awomori-ken.
42. Cultivation and preparation of hemp in Hiroshima-ken.

III.—MANURE, CHEMICAL ANALYSIS AND AGRICULTURAL TECHNOLOGY.

1. Analysis of the principal commercial manures.
2. On the effect of different nitrogeous manures.
3. Analysis of leguminous plants used for green manuring.
4. Phosphatic manures and their relative efficiency.
5. On the application of phosphatic manures on different kinds of soils.
6. On the absorption of nitrogen phosphoric, acid and potash by wheat and barley in the various stages of their growth.
7. On the absorption of nitrogen, phosphoric acid and potash by rice-plant in the various stages of its growth.

8. On the importance of nitrogen, phosphoric acid and potash to various agricultural crops.
9. On the effect of nitrogen on rice-plant grown in different kinds of soils.
10. On the manurial value of Chili saltpeter and the injurious action of perchlorate contained in it.
11. On the natural resources of nitrogen, phosphoric acid and potash.
12. On the influence of the three manurial ingredients on the quality of rice grains.
13. On the official methods of agricultural chemical analysis.
14. On the relative proportion of carbohydrates in the different varieties of sweet-potato.
15. On the composition of tobacco-leaves attacked by mosaic disease.
16. Proportion of indigo present in the indigo plantlets in the different stages of growth in nursery-beds.
17. Non-albuminoid nitrogenous compounds contained in tobacco-leaves grown in the province of Awa.
18. On the methods of determining the specific weight of seeds by a pycnometer and a common balance.
19. On the preparation of hemp fibre.
20. Sweet potato as material for extracting alcohol.
21. Investigation on Japanese indigo.
22. Chemical analysis during the germination of rice grains.
23. On the relation between the quality and composition of soja beans.

IV.—INSECTS INJURIOUS TO FARM CROPS.

1. Distinction between "Nika-Meichu" (Jathesia chrysographella, Merro) and "Sanka-Meichu" (Schacuobuis bipunctifer, Wk.)
2. Some egg-parasitic Hymenoptera found in Japan.
3. Lantern flies and leaf-hoppers of the rice-plant found in Japan.
4. Report on the remedy and prevention of Sanka-Meichu" in Tokushima-ken, 1899.
5. Japanese Benthredimidae.

6. A trap-lantern with potassium cyanide can.
7. On the proper period of cutting rice stalks injured by insects, as stalk-borers (Sathesia chrysoguaphella, Morre.)
8. On the relation between the injury of "Nika-Meichu" and rice-plants as to the kinds to be selected and the mode of their cultivation.
9. Habit and life history of injurious insects.
10. Effect of heat on the larvae of "Nika-Meichu."
11. On steeping in hot water the rice-straw inflicted with the larvae of "Nika-Meichu" with the object of destroying them.
12. Experiments on destroying "Sanka-Meichi."
13. Effect of heat on the injurious insects infecting stored grains.
14. Destructive power of oils against "Unka" (Gassidae and Fulgoridae.)
15. Effect of insecticides on the rice-plants.
16. Destruction of "Ine-Awomushi" (Naranga difusa, WKK.)
17. On the concentration and permiability of oils used as insecticides.
18. On the number of eggs laid on a leaf of rice-plant and those contained in the abdomen of a moth caught by a trap-lantern.
19. The period of the flight of "Nika-Meichu."
20. Researches on "Nika-Meichu" damage inflicted on a late variety of rice-plant at Nishigahara, 1900.
21. On the larvae of "Nika-Meichu" escaping from rice-straw.
22. On the hibernation of larvae of Nika-Meichu" in graminae plants other than the rice-plants.
23. Researches on the food-plants of "Nika-Meichu" other than the rice-plants.
24. On the number of larvae of "Nika-Meichu" remaining in the stump of rice-plant.
25. On the parts of the rice-stalk most infested by the larvae of "Nika-Meichu."
26. Experiments on the alcoholic extract of pyrethrum (Kentoyeki) against "Kakushoku-chingo" (Scotinophora vermiculata, Aard.)

27. Insecticides for "Saruhamushi" (Phoedon incertum, Boly.)
28. Experiments on the destruction of scale insects.
29. "Kōrogi" (true cricket, Gryllodes Chinensis, Web.) and "Emma-Kōrogi" (a cricket, Loxoblemmus haanii, Sauss).
30. About the hibernation of "Sanka-Meichu."
31. "Kiri-uji" (Tipula parva, Loew.), of the rice-plant.

V.—PLAN-DISEASES.

1. Prevention of the stinking smut of wheat (Tilletia tritica, Winter, and T. laevis, Kühn.)
2. Prevention of the smut of wheat (Urocyslis occulta, Rabb.)
3. Prevention of the smut of millet (Ustilago panici miliacei, (Pers), Winter.)
4. On the relation between the sowing period of barley and the injury caused by "Shimasusuki" (Helmint hosporiums gramineum, Rabb.)
5. Prevention of the damping-off of the egg-plant.
6. "Kingai" (Sclerotinia trifoliorum, Fricks) of "Genge" plant.
7. "Tachigarê" (Ophioblus graminis, Sacs) of barley, naked barley and wheat.
8. "Hagarê" (Helminthosporium oxyzae, Miyabe et Hori) of rice-plant.
9. Potato-rot in Nagano-ken (Phytophthora infestans, De Bary.)
10. White root-rot of grape and mulberry plantations.
11. A red fungus disease of scale insect (Aspidiotus perniciosus, var. albopunctatas ?)
12. "Imochi" (Piricularia grisea (Cook) Sacc) of rice-plant.
13. Smut of barley, naked barley, wheat, ete.
14. "Bakanari" (Fusarium heterosporium, Nees.) of rice-plant.
15. Influence of copper sulphate on the growth of plants.
16. "Imochi" of rice-plants in San-in districts.

VI.—TOBACCO CULTURE.

1. On the cultivation of tobacco.
2. On the curing of yellow tobacco-leaf.

3. On the varieties of tobacco most suitable for yellow tobacco.
4. On the sauces for flavoring tobacco.
5. On the nursery bed under cover.
6. On the drying of Japanese tobacco-leaf in flue curing barn.
7. On Turkish tobacco.
8. On cigar leaves.
9. Fertilizer experiments on tobacco.

I. LOCAL AGRICULTURAL EXPERIMENT FARMS.

THE FARMS MAINTAINED BY PREFECTURAL OFFICES.—Apart from the Imperial Experiment Stations above mentioned there are local experiment stations maintained at the local expense and chiefly devoted to the work of practical application and of model-farming.

There are 40 such stations throughout the country, with an outlay of about 403,335 *yen* altogether, or an average of about 100,000 *yen*. At each of the stations a number of experts are on duty, being under the control of the respective local Governors and subject to the supervision of the Minister of Agriculture and Commerce. These farms are not maintained entirely at the local expense, for the Government, with the object of securing the greater efficiency of the service, established in 1897 the provision of granting a certain rate of State aid within the limit of not more than 150,000 *yen* altogether every year.

THE FARMS MAINTAINED BY SUB-PREFECTURAL OFFICES.—Besides, there are experimental stations maintained by sub-prefectural districts, where simple experiments and the work of model-farmings are conducted. There are also lesser experimental stations established by towns or villages or by a body of farmers' sons. The experimental stations established by the sub-prefectural districts number 110 in all.

II.—LOCAL AGRICULTURAL INSTITUTES.

THE local agricultural institutes are maintained by the local treasuries and subject to the supervision of the Minister of Agriculture

and Commerce. The object of these institutes is to impart to farmers' sons and to farming people generally some elementary knowledgs on the general principles of agriculture, surveying, meteorology, physics, chemistry, natural history, veterinary science, farriery, etc. The institutes are also entitled to a share of the 150,000 *yen* fund mentioned above.

At present these establishments exist only in five places, Miye, Aichi, Miyazaki, Aomori and Hokkaidō, and these are turning out every year from 30 to several hundred graduates, who are to play an important part in the interests of local agriculture.

III. AMBULANT LECTURERS ON AGRICULTURE.

Lecturers on agriculture are appointed in local or sub-local districts to deliver lectures relating to farming and to answer all inquiries addressed to them on the same subject by farmers in the district. They must besides attend to the experimental farming carried on at the public expenses, to the local agricultural shows, and to other such matters. These lecturers have done much to increase the knowledge, practical and scientific, of our farmers. There are altogether 310 such lecturers throughout the country, according to the latest returns.

V. SERICULTURE INSTITUTES.

Imperial Institutes.—In view of the important part played by sericulture in the economy of the country and therefore of the necessity of adopting measures for promoting its interest, the Government attended to this business as early as 1874. Meanwhile febrine, that dreadful disease of the silkworm that had inflicted such terrible injury on the sericultural industry of France and Italy, began to make its appearance. Forced by the necessity of doing something to check such wholesale destruction, the Government established in Tokyo in April of 1884 the Silkworm Disease Laboratory. The result of the experiments there conducted was the adoption of Pasteur's method of "grainage cellulaire." Up to

1886 experiments not only on febrine but also on flacherie and muscardine were continued, and the reports embodying the results were distributed among all the parties concerned. In the same year, and as a result of those experiments the Government issued Rules for the Inspection of Silkworm Eggs. This legislation necessitated the training of men able to conduct the work of inspection. In 1887 a number of students were collected from all parts of the country and were admitted to the sericultural experimental laboratory established at Nishigahara, Kitatoshima, Tokyo, to receive instruction on the diseases of silkworm and on other important matters relating to sericulture. The scope of the teaching was expanded three years later and the standard of the instruction given was raised. Till 1895 the Laboratory conducted experiments on sericulture, distributed the reports compiled by it and also distributed eggs of such varieties of worms as were judged best. At the same time the Laboratory attended to the work of turning out experts on sericulture. Coming to 1896, the scope of the business was expanded with the consent of the Imperial Diet which advised the Government to establish sericultural schools of larger scope and better organization both at Tokyo and Kyoto. Thus in March of the same year the former sericultural Laboratory was superseded by a sericultural school in Tokyo, while, coming to 1889, another institute was started at Kinukasa-mura, Kadono-gari, Kyoto-fu. The two institutes have to take charge of the following matters :—

1. Instruction in sericulture.
2. Experiments and investigations in sericulture.
3. Lecture on sericulture.
4. Distribution of silkworm eggs.
5. The answering of queries.

The courses are of two kinds, main course and special course. In the former which extends over two years, the students are taught the scientific principles and practices of sericulture, while in the other course which lasts for only five months the students are instructed chiefly in the practical side and in the elementary principles of this important art. The number of graduates thus far number 1078

Further, there were 49 men who in 1888, were granted licenses to undertake the examination of silkworm eggs to supplement the

staff of inspectors for the better enforcement of the Rules for the Inspection of Silkworm Eggs, while from 1901 a special course was created at the two sericultural institutes above mentioned for the benefit of experienced sericulturists who wished to acquire some knowledge of the diseases of silkworm. The number of students at this course are :—

	Tokyo.	Kyoto.
1901	40	40
1902	43	40
1903	51	50
Total	134	130

LOCAL SERICULTURE INSTITUTES.

With the sudden rise in the prosperity of the sericultural industry soon after the Restoration, people from those places where the industry had just been started flocked to Nagano, Fukushima, Gumma and other districts where sericulture had been carried on from former times, in order to obtain some knowledge on the subject. The result was that several experts in those sericultural districts combined together and established institutes with the object of more conveniently imparting the necessary knowledge to the aspirants. The most notable of such private institutes were the Kakeda Institute in Fukushima-ken, the Takayama Institute in Gumma-ken, and the Kyōshinsha Institute in Saitama. But the training given at those places confined itself almost exclusively to the practical side of the industry. This lack of any scientific side in this system of training stood very much in the way of those graduates from keeping up with the new requirements of the times.

A regular system of sericultural education soon began to be provided in many parts, either as a special course in agricultural schools or as the only course in special sericultural schools or institutes, maintained either out of the public funds or by private

bodies. The sericultural institutes that now exist number 125 altogether.

V. STATE SILK-CONDITIONING HOUSE.

It was suggested long ago in some quarters that as a means of promoting the export of our silk a regular silk-conditioning house should be established to undertake the weighing of net and condition weight of silk and determine its quality. More than once the matter received the serious attention of both the public and Government, but it was not till 1894 that the arrangements for the establishment of such an institution were finally made and that two silk-conditioning houses were opened, one at Yokohama and the other at Kobe, the former in August of 1896 and the latter in June of the same year. Unfortunately the Kobe establisment had to close its doors in April of 1901, owing to the fact that it had not sufficient business to justify its existence.

On the other hand the business at the Yokohama establishment grew more and more active with the lapse of time, and to-day it is universally regarded as an important organ of our silk industry. The work undertaken at this establishment covers the following subjects:—

1. To determine the net weight of silk.
2. To determine the condition weight of silk.
3. To examine the number of breakages by means of re-reeling the silk and to determine the rate of such breakages per reel.
4. To examine the size of the filaments and to determine their relative uniformity.
5. To examine the relative number of flues and sluffs in the filaments.
6. To determine the elasticity and tenacity of the filaments.
7. To examine the relative quantities of gummy substances present in the filaments and to determine the relative decrease in the quantity incidental to boiling-off.

Of the foregoing seven items the most important are the first four, although the House is prepared to go through all the seven

stages of examination at the request of applicants. Most of the applications made at present are in connection with the determination of condition weight, the next greater number of applications relate to breakages and to the size, after which come the applications about elasticity, tenacity, and the presence of flues and sluffs. Applications about net weight and boiling-off are extremely rare. The number of examinations conducted at the House since its inception are as follows :—

	1896 year.	1897 year.	1898 year.	1899 year.	1900 year.	1901 year.	1902 year.
Gross Weight	—	18	1	68	42	2	161
Net Weight	221	178	232	737	4,007	18,236	38,751
Determination of Grade ..	968	2,431	4,636	8,469	7,079	15 003	28,749
Softening Diminution ...	47	16	15	7	21	2	4
Total	1,236	2,643	4,884	9,281	11,189	33,244	67,665

Note :—Examinations coming under Nos. 3. 4. 5. 6, in the preceding seven items were all included in the foregoing table in the column of " determination of grade."

The reason why the number of applications relating to the determination of net weight showed a sudden increase from 1900, the year of the enforcement of the revised treaty, was due to the fact that our silk merchants, desirous of removing various abuses that had previously existed in the business carried on between them and foreign exporters, had concluded with the latter a special arrangement by which the latter were entitled to demand a certain fixed rate of damages, in case the rate of humidity of the silk exceeded the prescribed limit

At first the House was not quite prepared to meet with the sudden increase in the number of applications that resulted; but owing to the necessary expansion made in 1901 in the scope of its arrangement, to-day it is ready to undertake with promptitude all such applications, so that both in the scope of the work it does and in its efficiency, the House can at present bear comparison with its foreign compeers.

VI. IMPERIAL ESTABLISHMENT OF TEA INDUSTRY.

Placed under the control of the Bureau of Agriculture, the Imperial Establishment of Tea Industry at Nishigahara in Kitatoshima

district, undertakes all the work relating to the cultivation of the tea-plant, the modes of curing the leaves and the improvement thereof, and the answering of all inquires coming from general tea manufactures and dealers. Finally, the establishment carries out inquiries into the state of the tea industry and market at home and abroad. It was established in 1896.

VII. ANIMAL EPIDEMIC LABORATORY.

Japan has often been subject to one or other kind of epidemic, as is shown by the almost constant outbreaks of anthrax that take place in the Kyūshu and Kinai districts where almost every year hundreds of cattle and horses fall victims to that disease. Serious loss has frequently been sustained by our stock farmers owing to the introduction of rinderpest from the continent, while glanders, farcy, rauschbrand, moonblindness, chicken cholera are diseases from which our stock farmers and poultry are suffering. It was to provide against such calamity that in 1891 the Bureau of Agriculture of the Department of Agriculture and Commerce established the Anima-Epidemic Laboratory with the object of ascertaining the best preventive measures to be taken, the work as conducted thus far by the Laboratory having been very beneficial. We may briefly describe it as follows, reserving further details for a future occasion. Its object, then, is to carry out:—

1. Experiments with tuberculine in cases of tuberculosis in cattle.
2. Experiments on Mr. Charvaux's anti-anthrax inoculation.
3. Experiments on the connection of fowl's blood with anthrax.
4. Experiments with regard to injections made in the case of milk cows when they are suffering from tuberculosis and with regard to the feeding of such cows.
5. Experiments to determine the part played by ordinary flies and horse-flies as media in the spread of cattle epidemic.
6. Experiments with regard to the cultivation of the germs of true farcy and glanders and experiments on inoculation with these germs.

7. Experiments on Mallein injections.
8. Experiments on the effect of silver nitrate and solution of perchloride of iron in cases of fowl diphtheria.
9. Experiments on blood-serum injection as preventive against chicken cholera.
10. Investigation with regard to preventive remedies and blood-serum treatment in the case of rinderpest.
11. Experiments in which immunity from anthrax has been effected by means of a certain disease germ.
12. Experiments on blood-serum treatment as a preventive of anthrax.
13. Practical application of the result of Dr. Mereskkowsky's investigations on the subject of getting rid of rodents by means of typhus germs.
14. Experiments on the duration of the officacy of tuberculin.
15. Experiments on the period of preparing blood-serum for use in case of anthrax.
16. Experiments on the duration of efficacy of blood-serum treatment as preventive against anthrax.
17. Investigation into the effective composition of tuberculin.
18. Experiments on the anti-rauschbrand inoculation.
19. Experiments on blood-serum treatment as preventive against rauschbrand.

VIII. IMPERIAL CATTLE BREEDING FARM.

General Remarks.—Japanese cattle being of inferior quality, impure in breed, and therefore coming far below those of the West whether for meat or for milk, the necessity for improving the breed has long been felt, especially in view of the marked advance that has taken place recently in the volume of consumption of milk and meat in our country. The birth-rate too of cattle does not even keep pace with the rate of slaughter. However the question of improving the breed having been regarded as one of greater urgency than that of increasing the birth-rate, and as the importation of costly foreign cattle can hardly be undertaken by private individuals or even by

communal bodies, the Government was obliged to start on its own account number of years ago the Shimosa Breeding Pasture and undertook the business of improving the breed of cattle and horses by hiring out for breeding purpose cattle and horses imported from abroad. Unfortunately, to the keen regret of all concerned, this pasture was abolished not long after. The necessity for re-opening a similar pasture was soon felt by the public, and petitions were sent by our stock farmers to the authorities asking for the restoration of former arrangement. At last the matter was taken up by the Imperial Diet, which passed a representation urging the resumption of measures for improving the breed of cattle and horses. The suggestion was adopted by the Government, and in 1900 the official organization relating to state cattle breeding pasture was enacted and the Nanatsukahara Cattle Breeding Pasture, the 1st station of this kind, was established in May of the same year at Yamauchi Higashimura, Hiba-gōri, Hiroshima-ken. At the same time a special commission was appointed entrusted with the work of drawing up a programme of improvements that might be made and of advising the Department of Agriculture and Commerce on all matters relating to such improvements. The Commission was composed of officials of the Department, Professors of the College of Agriculture of the Imperial Tokyo University and other experts.

Purchase of Breeding Cattle.—In the 1900 fiscal year an expert was dispatched abroad to making purchase of cattle and swine for breeding purposes. At the same time Japanese cows were bought in the same way for breeding purposes in the provinces of Hiroshima and Tottori. This purchase both of foreign and domestic cattle was repeated in the following year so that altogether the purchases made during the two years numbered as follows:—

Breed.	Sex.	1900.	1901.	Total.
Ayrshire	Cows	9	11	20
„	Bulls	3	2	5
Simmenthal	Cows	7	8	15
„	Bulls	3	2	5
Native Cattle	Cows	16	5	21
„ „	Bulls	—	—	—
		—	—	—
Total	Cows	32	24	56
	Bulls	6	4	10

Work.—The work undertaken by the State Pasture includes the investigation of all questions

1. Relating to the improvement of the breed and to the breeding and rearing of cattle.
2. Matters relating to the distribution and wider diffusion of breeding cattle.
3. Matters relating to the control of breeding cattle distributed.
4. Matters relating to the calves from cows paired with breeding bulls.

Number of Breeding Cattle.—The number of cattle used for breeding was as follows at the end of March, 1902:—

Breed.	Sex.	Imported.	Native Breed.	Born on the Pasture.	Total.
Ayrshire	Cows	20	—	10	30
„	Bulls	5	—	7	12
Simmenthal	Cows	14	—	6	20
„	Bulls	5	—	6	11
Native	Cows	—	21	1	22
„	Bulls	—	—	—	4
Half-breed	Cows	—	—	4	4
„	Bulls	—	—	4	4
		—	—	—	—
Total	Cows	34	21	21	76
	Bulls	10	—	17	27

Pairing and Breeding.—The pairing is mostly done in the spring, and the birth-rate is 7½ to 10 in the case of Ayrshires, 6 in the case of Simmenthals, and 5.55 in that of native cattle.

In October of 1901, rules were drawn up to regulate the leasing out for breeding purpose of the bulls kept in the Pasture, the bulls to be paired of course with the proper kind of cows.

Milk and Butter.—The milk supplied by the cows kept in the Pasture is used for feeding the calves born on the Pasture, the remainder being used for making butter, which, however, does not exeeed 100 pounds a month at present. Whatever milk remains is sold direct to dairy-men.

Swine.—The improvement in the breed of swine is also attended to at the Pasture, swines for breeding purposes being imported.

At the end of May, 1902, the number of swine at the Pasture was as follows:—

Breed.	Sex.	Imported.	Native.	Born on the Pasture.	Total.
Large Yorkshire	Sows	4	—	3	7
„ „	Boars	2	—	4	6
Middle „	Sows	2	—	2	4
„ „	Boars	1	—	1	2
Small „	Sows	2	—	3	5
„ „	Boars	1	—	2	3
Berkshire	Sows	6	—	14	20
„	Boars	3	—	12	15
		—	—	—	—
Total.	Sows	14	—	22	36
	Boars	7	—	19	26

Sale of Breeding Swine.—For the purpose of encouraging the improvement of the breed of swine the Pasture sold during the 1901 fiscal year 36 swine, 18 sows and 18 boars.

IX. IMPERIAL HORSE STUDS AND DEPOTS.

History.—The breeding of horses being rightly regarded as of vital importance to the prosperity and strength of the country, the Government commenced early in the Meiji era to improve the breed of horses by importing stallions for that purpose. The result was not wholly satisfactory owing to mistakes in the selection of breeds, and also in the pairing. But the interest of the country did not allow this business to be left neglected and the Government, warned by its past failures, decided to carry out thorough preliminary investigations as to the best way of dealing with this important matter, and to appoint a Special Commission for that purpose. At last in July of 1895 a Commission was appointed, and this Commission, as a result of investigations extending till 1897, submitted a report representing among other things the necessity of establishing horse studs and depots. This representation was approved of by the Government. It also obtained the consent of the Imperial Diet. Based on the inquiries carried out by experts dispatched to all the important horse breeding districts in the country, the

programme proposed the establishment of two studs and 10 depots and their completion in about seven years.

In June of 1896 the official arrangements for the establishment of state horse studs and depots were completed, and two studs and three depots were established. At the same time inspectors and other officials to take charge of the breeding business were appointed, and a few years after the Horse Section was created in the Bureau of Agriculture.

The improvement programme aims at completing the arrangements at the two studs and of increasing the number of depots to the prescribed limits, so that 10 per cent. of the breeding stallions required throughout the country may be supplied at those stations. The authorities are also contemplating the enforcement of castration in order to complete the improvement of the breeding programme.

Work.—The work to be undertaken at the Studs and Depots is regulated as follows:—

A. The Studs are to deal with all

1. Matters relating to the improvement of the breed of horses and all experiments in connection with their breeding and rearing.
2. Matters relating to the supplementing and distribution of breeding stallions.

B. The Depots are to deal with all

1. Matters relating to the breeding of breeding stallions.
2. Matters relating to the breeding stallions.
3. Matters relating to the control of private breeding stallions.
4. Matters relating to the colts born of mares paired with breeding stallions.

Number of Studs and Depots.—At present two studs and nine depots exist. Of the two studs one is located in Aomori-ken and the other in Kagoshima-ken. A depot is located in the prefectures of Iwate, Kumamoto, Miyagi, Akita, Fukushima, Miyazaki, Shimane, Aichi, and Ishikawa.

Purchase of Breeding Horses.—Not less than two experts are dispatched abroad every year to effect the purchase of breeding horses. These numbered as follows up to the 1901 fiscal year.

NUMBER OF BREEDING HORSES PURCHASED ABROAD.

Breed.	Sex.	Total.
Pure Arabs	Mares	5
	Stallions	7
Arabs	Mares	6
	Stallions	3
Pure Anglo-Arabs	Mares	9
	Stallions	11
Trotters	Mares	5
	Stallions	10
Thoroughbreds	Mares	3
	Stallions	3
Anglo-Arabs	Mares	2
	Stallions	4
Hackneys	Mares	4
	Stallions	5
		77

Besides the above, a large number of breeding horses were purchased at home, as follows :—

Mares	191
Stallions	283
	474

PAIRING.—The depots undertake the pairing of the stallions kept therein with mares belonging to private individuals. This was done previously free of charge, but a small fee has been charged since the 1902 fiscal year for pairing with superior stallions, mostly of imported breeds, owing to the fact that too many applications for pairing had been sent in. The necessary permission being of course only given to mares properly qualified, the colts born of the mares by the stallions kept at the Depots are much better than those generally produced.

The object of the Studs is to keep mares and stallions and to supply superior stallions for the Depots, but as these Depots have not yet come up to the prescribed number, the stallions kept at the Studs are allowed to pair to some extent with mares of private people. This pairing was therefore started in the same fiscal year, a fee being charged, as in the case of the Depots.

The number of pairings carried out at the Studs and Depots during the five years ended 1901 is as follows:—

Stallions used for pairing	454
Numbers of mares paired	9,806

It may be noted that at the Studs the pairing with mares kept by private people was started from 1899.

COLTS.—The colts born of mares paired with the stallions kept at the Pastures and Studs are as follows:—

Year.	Foreign Breed.		Half Breed.		Native Breed.		Total.	
	Stallions.	Mares.	Stallions.	Mares.	Stallions.	Mares.	Stallions.	Mares.
1897	—	—	6*	3*	6*	4*	12*	7*
1898	3*	2*	10*	13*	—	2*	13*	17*
	3	2	41	45	27	29	71	76
1899	4*	1*	23*	25*	7*	6*	34*	32*
	—	—	72	80	71	58	143	138
1900	1*	6*	29*	21*	5*	6*	32*	31*
	—	1	138	140	209	200	347	341
1901	8*	8*	47*	44*	—	—	55*	52*
	2	1	238	245	320	336	560	582

Notes:—The figures marked with an asterisk denote the colts born of mares kept at the Studs, the rest being born of mares kept by private people.

NUMBER OF HORSES.—The number of horses at the Studs and Depots at the end of the 1901 fiscal year were:—

	Foreign Breed.		Half Breed and Native Breed.		Farm Horses.		Total.	
	Stallions.	Mares.	Stallions.	Mares.	Stallions.	Mares.	Stallions.	Mares.
O-u Stud	24	45	37	134	17	—	78	179
Kyūshu Stud ...	11	14	33	98	16	—	60	112
Iwate Depot... ...	4	—	62	—	4	—	70	—
Kumamoto Depot	2	—	27	—	7	—	36	—
Miyagi Depot ...	4	—	29	—	4	—	37	—
Akita Depot... ...	3	—	23	—	2	—	28	—
Fukushima Depot	2	—	25	—	2	—	29	—
Miyazaki Depot ...	3	—	24	—	—	—	27	—
Shimane Depot ...	—	—	16	—	—	—	16	—
Aichi Depot... ...	—	—	16	—	—	—	16	—
Total... ...	53	59	291	232	52	—	397	291

Note:—Besides the above O-u and Kyūshu Studs had each 11 farm cattle and the Kumamoto Depot 2 farm cattle.

Other Agricultural Organizations. — The organizations described thus far belong either to the Government or to civic corporations. There are other organizations established under law by bodies of farmers, such as agricultural societies, industrial guilds, guilds relating to farming, tea guilds, cattle and horse guilds, and others. These will be described under the chapter of agricultural legislation to be given later on.

CHAPTER VII.—Stock-Breeding.

History and Existing Condition—Kind of Breed and Number of Live-Stock.

I. HISTORY.

Horned Cattle. — Scientific men agree that the horned cattle in Japan must have been introduced from foreign countries. Presuming this theory to be correct, the introduction must have taken place in some remote pre-historic period, for even in the very earliest authentic record, we find many references about the rearing and utilization of cattle. What is specially worth mentioning is the fact that the slaughter of cattle both for food and for sacrifice was an ordinary occurrence in ancient times, so that it was not until after the introduction of Buddhism that the slaughter was forbidden under a severe penalty. The use of milk and even of butter was also known, and remained in vogue down to the period of the Restoration. These two articles, were, it should be noted, used as a sort of drug. Official pastures were established as early as the reign of the Emperor Ankan (534–'35 A.D.), while in the time of the Emperor Junna (824–'32) cattle could be used instead of currency in the payment of taxes. On the whole, however, cattle were almost solely used till the Restoration as beasts of burden and employed very little for other purposes.

The most noted cattle-rearing centres during the Tokugawa Regency were Tamba, Tango, Tajima, Inaba, Hōki, Oki, Izumo, Mimasaku, Bitchū, Bizen, Bingo, Iyo, Hizen, Higo, Iki, Hyūga, Ōsumi, etc. The inspection of horned cattle and horses was officially conducted there every spring.

Official Encouragement of Cattle-breeding.—Coming to the new régime we find that 15 foreign cattle were purchased at Yokohama from a certain English merchant in 1869. This purchase

may be regarded as the first step in the work of improving cattle-breeding in Japan, as it was certainly the first time that such a purchase was made. The Government did spare neither money nor pains in encouraging the development of the industry, and till 1882 the total sum of the loans advanced to cattle-breeders by way of encouraging the industry amounted to over 125,000 *yen*. At the same time, in order to show the public a model method of breeding, the Home Office established a pasture at Shimōsa. For use at this Shimōsa Stud a large number of horses and sheep were imported, and were either hired out or sold for breeding purpose. Till 1885 when the Stud was transferred to the Imperial Household Department the number of cattle purchased for it totaled 175 bulls and 126 cows mostly of mixed breed. Then 126 bulls or cows were hired out and 44 others were sold.

The abolition of this Stud as a Government undertaking ten ed very much to arrest the progress of stock breeding, but the ill effects of this step were counteracted when coming to 1900, the Government established a stud in Hiroshima-ken, as was described at greater length under the heading of State Breeding-Farms.

The Horse.—The horse appears to have been indigenous to Japan ; at least its use for military purposes was known as far back as our authentic history goes. The present to the Japanese Court of several horses by a king of Kudara (part of Korea) in the 47th year of the Regency of the Empress Jingō (247 A.D.) was perhaps the first nstance borne out by authentic record, of the introduction of horsesi of foreign breed into Japan. A similar present was repeated subsequently by one or other of the rulers ef the three independent Kingdoms of Korea, as the peninsula was then divided. Meanwhile the Court paid much attention to the rearing of horses, and in the reign of the Emperor Daigo (898–'93) we find that an Imperial mew was established to take charge of this business. Of a large number of pastures existing throughout the country 39 were brought under official protection, and of that number 32 existing in Musashi, Kai, Shinano and Kōzuke were set apart for the use of the Court. No olden records about pastures in the north-eastern districts of Honshū are to be found, owing to the fact that these districts had not then been completely brought under the rule of the central Govern-

ment. The breeding, however, must have been equally prosperous there as in Kai and Shinano.

With what special importance horses were formerly regarded may be easily seen when it is remembered that they were often given as presents when the donors wished to manifest unusual respect. For instance history records the present of horses by Yoritomo to the ex-Empress Goshirakawa, and the same chief of the Genji clan also offered 1,000 horses to the Todaiji Temple on a certain occasion. These facts also serve to prove that the business of horses rearing must have been extensively carried on in the Kwanto districts, that is, the provinces lying round about the present Tokyo, for Yoritomo had his vice-regal residence at Kamakura. The transfer of the vice-regal seat to Kyoto in the time of the Ashikaga Regency very much affected the prosperity of the horses breeding industry in these eastern provinces.

Importation of Foreign Horses in Early Days.—Meanwhile as the result of establishment, on a limited scale it is true, of commercial relation between Japan and some of the European countries, foreign horses were frequently brought into our country either as presents by the foreign merchants or at the order of one or order of the various departments of Government in Japan. Perhaps the present of a number of Arabian horses by some Italian and Portuguese during the Tembun era (1534–1554) was the first occasion on which horses were brought from such a great distance into the country. Such importation of foreign horses was especially frequent during the Tokugawa Regency. For instance, during the time of the eighth Shogun the Regency purchased 28 stallions and mares of Persian breed, and distributed them for purpose of breeding among Koganegahara of Shimosa, Mineoka of Awa, Sannohe of Mutsu and others, at each of which places an important pasture existed. The present of 11 stallions and 15 mares of Arabian breed by Napoleon III in 1867 in return for the present of silkworm eggs made to the French Court by the Shogunate may also be mentioned here. Nothing in particular is known about what has become of those horses.

The Regency possessed 20 pastures of its own, among which those at Kogane, Sakura, Mineoka, and Ashitaka were most important. Among the feudal princes, those of Nambu, Sendai, Miharu,

and Kagoshima paid special attention to the business of horse-rearing, and some of them imported Persian or Java horses for improving the breed in their own dominions.

Encouragement by the Imperial Government.—The Restoration was a turning point in the activity of this industry as it was in all the other branches of public activity. In 1871 an American expert was engaged and given charge of the stock and general farming, and at the same time two Japanese officials were dispatched to America to study the condition of horse-breeding and the various agricultural industries there. A stud was soon established at Komaba and a depot at Shinjuku, both in the suburbs of Tokyo; and then another depot was established at Katori, Shimosa, where two foreigners were employed. This was soon combined with the sheep pasture that had existed in another part of the same province. Finally, as already mentioned, the Shimosa stud was transferred to the Imperial Household. A portion of the pasture was leased by the Department of Agriculture and Commerce and the breeding work was attended on a limited scale. Even this lasted for only a few years, and with the repeal of all the rules relating to the hiring out of breeding bulls and horses, the Government stock-breeding enterprise was entirely suspended.

The breeding horses imported by the Government from 1877 to 1903 are as follows:—

	Stallion.	Mares.	Total.
Trotter	30	23	53
Perchelon	3	2	5
Clydesdale	1	1	2
Australian...	1	—	1
Hungarian	7	2	9
Arabs	9	12	21
Anglo-Arabs	15	11	26
Thoroughbred...	5	5	10
Hackney	12	17	29

In Hokkaidō especially while the old Board of Colonization existed, special attention was devoted to encouraging stock-breeding besides encouraging general agricultural work. Mr. Horace Capron

and two other American experts were engaged to take charge of the business. About 19 horses of Trotter breed and 8 of Perchelon breed were imported. The present activity of horse-breeding in the celebrated Niikappu Horse Stud, now belonging to the Court, was a result of the assiduous care which the Hokkaidō Board at first extended to stock-breeding.

The Army, again, undertook a similar enterprise on its own account, and by importing a large number of Arabs, Trotters, etc. hired them to the breeders with the object of improving the native breed.

Nor did general breeders care less about their business, on the contrary they also imported foreign breeding horses to a greater or less extent, the breeds selected for the purpose being Hungarian, Australians, Algerian, Anglo-Norman, Anglo-Arabian; but the returns as to the number thus imported are unknown.

For particulars about the revived interest taken by the Government and general public in horse-breeding, our readers are referred to the chapter on State Breeding-Farms given in the preceding section of this work.

Sheep.—Sheep did not originally exist in Japan, and indeed it was as late as 1817, that the sheep-rearing was first undertaken in this country, a number of sheep having been imported in that year from China to Yedo. They were kept at the botanical garden in Sugamo, a suburb of Yedo. The wool obtained from those sheep was woven into carpets, and the Government of Yedo was able for the first time to supply itself with home-made carpets, the goods having always come previously from China and Korea. About forty years after, at the request of the magistrate of Hakodate, forty sheep were sent to be reared there.

The history of sheep-rearing after the Restoration is practically identical with that of cattle-rearing or horse-rearing. It is enough, to state here that from the beginning of sheep-rearing in 1874 and the transfer of the Shimosa Stud to the Imperial Household Department, 5,250 sheep were imported, the number of lambs they gave birth being 10,335. The Stud hired out 2,228 and sold 2,334.

So far the business of sheep-rearing by Government has general-

ly been a failure, and it is only at the Imperial Household Stud at Shimosa, the pasture belonging to the Sapporo Agricultural College, the Hokkaidō Stud, and private pastures in Nagasaki and Aomori that the rearing is continued to some extent. However there is no valid reason why this particular branch of stock-breeding should not succeed in Japan. Indeed the result obtained at the Shimōsa Stud and in the provinces of Nagasaki and Aomori tends to prove the possibility of sheep-rearing being carried to success. It was evidently from this consideration that the proprietors of the Koiwai Pasture, Iwate-ken, opened in 1901 this business of sheep-rearing by specially importimg for that purpose some dozens of Shropshires from England.

Swine.—Judging from the ancient records that the surname Ikai (swine-herd) was given to certain individuals in the reign of the Emperor Ankō (454–'56 A. D.), the rearing of swine must have been carried on in Japan from remote antiquity, the beast having probably been imported from either China or Korea. The prohibition of the slaughter of swine for food on account of religious prejudices was a death-blow to the breeding of this beast for slaughter, for we find that business soon disappeared from Japan. However, towards the beginning of the Tokugawa Regency, some people of Nagasaki got a pair of swine on one occasion from Chinese traders, and this led to the rearing of the beast being revived to some limited extent in Kyūshu. But it was in Okinawa that the business attained its greatest prosperity, owing partly, perhaps, to the fact that the people there very much resembled the Chinese in manners and customs. Even to-day Okinawa, except Formosa, shows the best record in swine-breeding of all Japan.

After the Restoration the rearing of swine was conducted as a subsidiary industry to that of cattle, horses and other domestic animals, and when in 1900 a Government cattle depot was established, the business of swine-breeding was made subordinate to it. Ten pigs of Berkshire breed and 12 Yorkshires were imported from England. At the same time the growing demand for pork, both in fresh or cured form, has very much encouraged the breeding of this beast for slaughter among the people.

II. KIND OF BREED AND NUMBER OF LIVE-STOCK.

HORNED CATTLE.—Strictly speaking there was only one original breed of cattle in Japan, chiefly because no care was taken in artificial selection. Indeed there was no need of any artificial selection inasmuch as cattle were practically intended for the single purpose of serving as beast of burden. In this respect our cattle excellently served the purpose, being hardy and strong. But the neglect of care in breeding left its mark in the somewhat deformed appearance of our cattle, for though sufficiently well-shaped in the forward half they are rather ill-formed in the hind quarters. The hilly nature of the country had also no doubt something to do with this peculiarity in the shape of our cattle.

NATIVE VARIETIES.—Though our original cattle are practically uniform in breed, they still admit of being broadly subdivided into two or three varieties, principally by color. One of them is black with small white spots on the belly, the second is brown, while the third is brindled with black and white spots. The black breed, which, by the way, is most valued by our people, predominates in the north-eastern districts and the middle section of Honshū, as also in Shikoku and Kyūshu; the brindled variety is found in Oki and Hirado and other islands, while the brown breed is generally found in the other parts of Kyūshu. Of the three the brindled cattle very much resembles in appearances to the Dutch cattle, and probably this variety may be the descendants of foreign cattle imported at some unknown time into Japan. They also possess comparatively well formed heads. The brown variety apparently came, originally, from Korea.

FOREIGN BREEDS.—The breeding cattle imported since the Restoration from Europe and America must number over 10,000. In breed they were mostly Short-horns, Devons, Ayrshires, and Dutch. The number of breeding cattle during the last few years is shown below:—

Year.	Native Breed.	Foreign Breed.	Mixed Breed.	Total.
1898...	1,669	525	431	2,625
1899...	1,684	575	533	2,792
1900...	1,680	514	692	2,886
1901...	1,805	489	811	3,105
1902...	1,804	815	561	3,810

BIRTH-RATES.—In 1900 Shimane with 313 headed the list, followed next by Tottori, Okayama, and Hiroshima over 200 each, after which came Hyogo, Kagoshima, Yamaguchi, Fukuoka, and Nagasaki.

The birth-rates in a year are as follows, according to the latest available returns :—

	Cows.	Bulls.	Total.
Native Breed	63,917	55,829	119,746
Foreign Breed	2,507	1,859	4,366
Mixed Breed	15,525	12,183	27,708
Total	81,949	69,871	151,820

In Hiroshima, Shimane and Okayama the births reach every year over 10,000 each, while in Hyogo, Tottori, Kagoshima, Ōita, Kumamoto, and Ehime the number exceed 5,000 each.

NUMBER OF CATTLE.—Lastly the existing number of cattle is as follows :—

Year.	Native Breed.	Mixed Breed.	Foreign Breed.	Total.
1893	1,050,969	44,980	9,252	1,105,201
1894	1,033,384	47,701	10,284	1,091,369
1895	1,068,016	55,769	12,493	1,136,278
1896	1,066,126	69,898	13,737	1,149,761
1897	1,127,730	70,639	15,794	1,214,163
1898	1,135,968	79,157	15,351	1,230,476
1899	1,139,466	95,924	14,475	1,252,865
1900	1,127,016	115,021	19,177	1,261,214
1901	1,148,202	114,333	19,806	1,282,341

At the end of 1900 Okayama and Hiroshima with over 90,000 each came at the head of the list, followed by Nagasaki, Hyogo, Kagoshima, Shimane, Yamaguchi, Ōita and Kumamoto with 80,000 to 50,000 each. On the other hand Ibaragi, Saitama, Tochigi and Toyama had each less than 1,000, Ibaragi with less than 500 coming at the bottom of the list.

THE HORSE.—It is not possible to determine the original breed of horses in Japan. However, a breed of small pony found in Oki, Shikoku, Iki, Okinawa, Awaji, and a part of

Kyūshū and Hokkaidō is regarded as original variety by some experts. Certainly this breed seems to be the oldest variety in Japan. It is characterized by hardihood, by comparatively great strength and by enduring power.

Original Breed.—However, the original breed or what is generally understood to be such in Honshū is larger in shape, measuring 4½ to 4.8 *shaku* in stature, and with a constitution and cast of head distinct from the smaller breed mentioned above. If therefore the latter should be regarded as the real original variety the other may be a mixed breed between it and an imported variety.

Import of Foreign Breeds in Early Days.—As to the kinds of foreign horses that were imported into Japan in olden days, the horses that were brought from Korea in ancient time belonged to the Mongolian breed while those that came in Japan during the Tokugawa Shogunate were horses of Persian breed. The former mostly produced horses of heavy type and the latter horses of light type. These two different types can be distinctly seen to-day among our horses, the horses produced at Nambu and Akita belonging to the heavier type and those at Sendai, Miharu and Kagoshima belonging to the lighter variety.

Native Varieties.—A brief description of those different varieties is given below.

a. Nambu Horses.—Horses produced at Aomori and Iwate are the largest of all in Japan (larger horses measuring over 5 *shaku*), have broad chests, strong bones and joints, and are mild in disposition, and possessed of great power of endurances. Horses of lighter type are used as mounts and those of heavier build as draught horses.

b. Akita Horses.—Produced at Akita-ken, they are somewhat inferior in build to the former with more or less defect in the proportion of the different parts of the body; have heavy head and long trunk, and are rather dull.

c. Sendai Horses.—The type of horse, bred at Miyagi-ken, is more slight in form than the Nambu horse. It has also a deep chest, a sloping hip, a small head, big sharp eyes, a long weak neck, and slender bones. The blood of the Persian horses imported by a feudal prince of Sendai about

3 centuries ago evidently runs in the veins of these horses, but, owing to the greater intermixtures of the foreign breeds that has recently taken place, the original characteristics are gradually being obliterated.

d. MIHARU HORSES.—Produced at Fukushima-ken they are mettlesome and hence better fitted for mounts than the three preceding breeds. They have thin skin, small heads, large eyes, and somewhat long neck. The chest and forelegs are strong, and the horses can raise their forelegs with great dexterity. They are not fitted for heavy work. These horses have also got some foreign blood in them.

e. KAGOSHIMA HORSES.—Produced at Kagoshima, they are quick and mettlesome and even prove intractable, have small heads, large eyes, and short bodies with level tail. They are mostly used are mounts.

Besides the above varieties, horses more or less different in type are also produced at Kumamōto, Miyazaki, Kōchi, Yamagata, Nagano, Ishikawa, Aichi, Gifu, Ibaraki, Tochigi and Hokkaidō, but it may be broadly stated that the build is generally heavier as we go toward the north and lighter in districts situated in the opposite direction.

IMPORT OF FOREIGN HORSES RECENTLY.—The import of a large number of foreign stud horses by the Court, Government and people since the Restoration has very much improved the type of our horses, which have gradually began to assume a noble cast of face and to acquire nimbleness, making them well suited for mounts. The foreign horses imported mostly belong to American, Hungarian and Algerian breeds, next to which come Arabian, Anglo-Arabian, and Hackney breeds. There are also Thoroughbreds, and Australians while a few are of Anglo-Norman, Clydesdale and Turkish breeds.

NUMBER OF HORSES.—The existing number of horses in Japan is shown below:—

Year.	Native Breed.	Mixed Breed.	Foreign Breed.	Total.
1898	1,555,405	31,488	804	1,587,697
1899	1,504,243	41,767	749	1,546,759
1900	1,484,824	56,048	1,107	1,541,979
1901	1,461,416	70,198	1,559	1,533,173
1902	1,434,831	78,805	1,737	1,515,373

In 1900 Kagoshima with about 115,000 headed the list followed by Kumamoto with 106,000, and Iwate with 95,000. Fukushima, Hokkaidō, Miyazaki, Aomori, Akita, Miyagi, Nagano, Ibaraki, Tochigi, and Ōita with 50,000 to 87,000 came next.

NUMBER OF STUD-STALLIONS.—The number of stud-stallions is as follows :—

Year.	Native Breed.	Mixed Breed.	Foreign Breed.	Total.
1898	4,397	1,317	80	5,794
1899	4,200	1,610	104	5,914
1900	3,616	1,769	141	5,526
1901	3,183	2,251	171	5,605
1902	2,790	2,649	198	5,637

At the end of 1901 Fukushima, Iwate, Aomori, and Kagoshima possessed over 500 stallions each, while Hokkaidō, Miyagi, Akita, Kumamoto, Miyazaki, Nagano and Okinawa possessed over 100. Tokyo, Kyoto, Ōsaka, Nara, Miye, Shiga, Yamaguchi, Wakayama, Tokushima and Kagawa occupied the other extreme.

BIRTH-RATES OF HORSES.—According to the latest returns available, the births during the last three years were as follows :—

	Native Breed.	Mixed Breed.	Foreign Breed.	Total.
1900	91,641	12,834	107	104,582
1901	85,879	15,307	129	101,315
1902	83,558	17,172	166	100,896

Fukushima and Kagoshima had over 10,000 births each, followed by Iwate, Aomori, Akita, Kumamoto, Miyazaki, and Hokkaidō.

SHEEP AND GOATS.—The sheep numbering over 1,200 that were imported from China in 1876 comprised about 800 of Mongolian breed and about 400 of Shanghai breed (originally produced at the north-eastern districts of China), but they never throve, and generally died of some disease or other. The breed of sheep sent for America by the Shimōsa Pasture mostly consisted of Costswold, Merino, and South-downs. At present there are found only about 2,500 sheep of foreign breed in Japan, they being Merinos, Southdowns (also South-downs interbred with other varieties), and Shropshires.

The goats found in Japan are very rarely of pure blood; most of them, especially those for milk, have more or less of the blood of the Bear or Thibetan breed. Only in Okinawa do we find breed whose flesh is used for food. This breed originally came from China.

Okinawa possesses the largest number of sleep of all the places in Japan, the number reaching over 50,000. Then follows Kagoshima with 67,000 approximately, followed by Nagasaki with about 3,000. The number is extremely small in other districts. The total is as follows:—

Ewes, 42,126. Ram, 17,788. Total 59,914.

Swine.—Two native breeds may be regarded as existing, namely the Yato breed and Okinawa breed. The foreign breed very rarely remains pure, except a number of Berkshires and Yorkshires imported by the Government a few years ago. The Berkshires, Porland-China, Chester White and others imported from America more than ten years ago have generally degenerated. Such being the case it is not easy to draw any distinct line of demarkation between native and foreign breeds, so that the two terms as applied to swine are at best very arbitrary. Here is a statement as to the number:—

Native Breed	149,995
Mixed „	28,079
Foreign „	3,102
Total	181,176

Okinawa contains about 57 per cent. of the whole number, its returns standing at 103,000. Kagoshima with about 37,000 follows it, and then come Chiba and Nagasaki. In many other places the number falls below 1,000.

III. REGISTER.

The only thing worth mentioning about the register of pedigrees of cattle and horses in former time was the fact that in the "Middle

dle Ages" a strict regulation was enforced about making burnt-mark on horses, with the object of providing against the tricks of dishonest dealers. At present no regulation exists about the pedigree of horses or cattle, and the matters are left to the discretion of the people.

IV. SLAUGHTER.

The custom of eating the flesh of animals having been forbidden in former times from religious motives, it was only among the class of social outcasts called *eta* (corresponding to pariah) that the custom of eating flesh existed to some extent. The discontinuation of this custom subsequent to the Restoration brought about a revolution in the butcher business. At the end of 1900 the number of slaughter-houses existed was 1,396 throughout the country. Subjoined is a statement of the slaughter returns:—

Year.	Cattle.	Horses.	Sheep.	Swine.
1893	104,772	30,990	—	—
1894	149,677	31,459	1,404	30,404
1895	160,456	36,026	4,664	41,419
1896	151,959	44,825	4,058	38,637
1897	158,504	41,049	6,805	107,034
1898	167,985	41,478	8,388	108,217
1899	208,877	47,150	7,755	89,219
1900	233,385	53,531	8,329	93,904
1901	199,655	45,442	7,873	106,808
1902	206,030	47,875	7,125	124,263

V. DISEASES OF DOMESTIC BEASTS.

Origin of the Diseases.—No data being available about the diseases of live-stock in former times, the present paragraph gives only a brief outline of those diseases as they have appeared since the Restoration.

Most of those diseases originally came from the Asiatic continent and therefore first made their appearance in districts regularly connected by trade with one place or other on the continent. At present the diseases more or less present a local character. For

instance farcy and glanders generally prevail in the north-eastern parts of Honshu, anthrax in Kyūshu and the districts round about Osaka and Tokyo, rauschbrand in Hyogo, Tottori, Okayama, Yamaguchi, etc., rabies in Tokyo, Kanagawa, Yamaguchi and Kyūshu.

The first case of the appearance of rinderpest was in 1872, the second twenty years after, while it was in 1900 that foot-and-mouth disease first came from Shanghai and wrought serious damage among the milch cows of Tokyo, Kyoto, Kanagawa, Hyogo, and Ishikawa. Other kinds of diseases are comparatively insignificant. Here are two tables showing the diseases record:—

TABLE NO. 1.

Year.	Rinderpest.			Anthrax.				Glanders and Farcy.		
	Cases.	Deaths.	Slaughter	Cases.	Deaths.	Slaughter	Recovery	Cases.	Deaths.	Slaughter
1892...	3,863	796	3,552	1,061	905	1	31	2,164	63	53
1893...	5,031	666	4,711	581	498	5	27	1,604	51	61
1894...	251	57	243	442	418	7	6	1,458	39	46
1895...	1,483	258	1,308	377	322	7	24	1,332	54	26
1896...	969	139	1,298	545	504	—	22	1,537	76	51
1897...	6,190	508	6,722	573	481	1	42	1,899	47	80
1898...	—	—	—	534	496	—	30	2,227	96	61
1899...	—	—	—	609	545	—	64	1,770	100	91
1900...	191	9	669	856	829	—	18	782	74	47
1901...	103	8	314	542	512	1	22	442	18	22
1902...	88	13	153	599	528	—	24	530	27	17

TABLE NO. 2.

Year.	Rauschbrand.				Pseudo-Farcy.				Foot & Mouth Disease.			Rabies.		
	Cases.	Deaths.	Slaughter	Recovery	Cases.	Deaths.	Slaughter	Recovery	Cases.	Deaths.	Recovery	Cases.	Deaths.	Slaughter
1897 ...	18	17	—	—	—	—	—	—	—	—	—	—	—	—
1898 ...	63	52	—	1	—	—	—	—	—	—	—	64	22	33
1899 ...	60	63	2	1	237	2	3	61	—	—	—	120	—	—
1900 ...	97	95	—	—	689	11	33	568	2,322	30	1,950	247	146	96
1901 ...	76	74	1	1	899	19	38	679	627	52	564	189	61	128
1902 ...	95	95	—	—	1,170	34	106	1,037	522	13	509	107	31	76

Note:—Rauschbrand was separated from anthrax from 1897, they having been mixed together formerly; pseudo-farcy was included in glanders and farcy till 1899, while rabies was first included in 1897 in the list of diseases prevalent among domestic beasts.

VI. VETERINARY SURGEONS AND FARRIERS.

Surgery.—Before the Restoration the so-called veterinary surgeons were horse and cattle dealers who, besides dealing in these beasts, used to periodically apply needle treatment and other simple methods to the beasts. They were of course up to the trick of cheating in transaction of beasts just as practised by horse-dealers of other countries. The engagement early in the era of a French military veterinary surgeon by the Army was the first step taken by the Government for the introduction into this country of the science and practices of the Western veterinary surgery. By the subsequent establishment of schools of agriculture by the Government and also by local offices this branch of medicine has been reduced to a regular system. Till 1885, there were about 6,000 men who were allowed to practise the art in virtue of their previous experience, but the grant of licenses to men of this class was discontinued in 1890 and from that time onward licenses have been granted only on those who have passed the regular examination or have graduated from the veterinary course at Government or public schools, or at private schools of officially approved standing, either Japanese or foreign At the end of 1900, 2,545 people had regular licenses and 1,713 provisional licenses.

Farriery.—The practice of shoeing horses was formerly unknown in Japan; it was introduced from the West together with the science of veterinary. The regular examination exists, as in the case of veterinary surgeons, for giving licenses to farriers, and this license is granted to those who have passed the examination or have graduated from the course of veterinary surgery or farriery at Government or public schools or at private schools of officially approved standing whether at home or abroad, and also to those who possess the regular license of a veterinary surgeon. At the end of 1900, 2,948 men possessed regular licenses and 730 men provisional licenses.

It ought to be added that in places where the number of veterinary surgeons or farriers is insufficient the Minister of Agriculture and Commerce may grant, on recommendation of the local Governors, the provisional license valid for a limited number of years to those

who are judged to possess sufficient experience either as veterinary surgeons or as farriers.

VII. USE OF LIVE-STOCK.

CATTLE is still principally reared for purposes of tillage and for getting manure, and it was only recently that the rearing of them for their milk and their meat was commenced. The number of sheep reared being still small, wool for weaving is imported in a large quantity from foreign countries, while sheep as mutton principally come from Shanghai, the yearly importation being about 1,000. Swine is also insufficient in number to supply bristles for manufacturing purposes, and these are imported from abroad.

VIII. DAIRY-FARMING AND MEAT-PRESERVING.

The industry is still in a comparatively primitive condition and can hardly supply the growing demand at home. At the end of 1900 there were 23,931 milch cows in Japan, but the milk they produce is almost entirely used while fresh. The bulk of the preserved meat consumed in the country may be said to be imported. Subjoined are two tables giving a statement of the volume of output of dairy products and preserved meat at the end of 1901.

DAIRY PRODUCTS.

	Butter.		Cheese.		Condensed Milk.	
	Output. *kin.*	Value. *yen.*	Output. *kin.*	Value. *yen*	Output. *kin.*	Value. *yen.*
Hokkaikō	3,562	2,449	—	—	—	—
Tokyo...	15	16	—	—	70,649	54,017
Kyoto...	200	90	—	—	3,690	830
Ōsaka	—	—	—	—	146,437	28,160
Kanagawa	1,357	1,168	1,500	750	4,229	958
Niigata	3,607	454	—	—	—	—
Gumma	3,439	4,573	—	—	—	—
Chiba	200	160	—	—	185,021	29,360
Tochigi	535	535	—	—	—	—
Iwate	1,080	1,026	—	—	—	—
Shimane	—	—	—	—	171	39
Yamaguchi...	—	—	—	—	13,782	2,342
Kumamoto	—	—	—	—	125	52
Hyogo...	320	320	—	—	—	—
Total	14,315	10,793	1,500	750	424,104	115,761

MEAT-PRESERVING.

	Ham.		Bacon.		Salt Meat.		Tinned Meat.	
	Output.	Value.	Output.	Value.	Output.	Value.	Output.	Value
Hokkaidō ...	62	18	4	1	30	6	—	—
Tokyo	—	—	—	—	—	—	61,000	11,800
Kyoto	—	—	—	—	22,961	5,281	—	—
Ōsaka	—	—	—	—	—	—	42,000	7,560
Kanagawa ...	7,458	1,192	2,500	320	—	—	—	—
Hyogo	1,500	660	50	15	—	—	10,486	2,306
Nagasaki ...	70,300	3,101	81,000	19,400	5,500	1,240	1,325	495
Niigata	—	—	—	—	—	—	4,000	400
Miye	—	—	—	—	—	—	112	175
Chiba	—	—	—	—	12,500	2,000	—	—
Aichi	—	—	—	—	—	—	1,484	489
Shizuoka ...	—	—	—	—	—	—	1,937	340
Gifu	—	—	—	—	—	—	3,820	1,194
Yamagata ...	—	—	—	—	—	—	1,112	444
Akita	—	—	—	—	—	—	4,800	768
Shimane ...	—	—	—	—	—	—	7,853	2,989
Okayama ...	—	—	—	—	—	—	147,970	27,434
Hiroshima ...	—	—	—	—	—	—	1,218,453	216,131
Yamaguchi ...	—	—	1,325	636	375	75	12,881	2,146
Ehime	—	—	—	—	—	—	65,000	12,155
Ōita	—	—	—	—	—	—	14,625	18,281
Kumamoto ...	—	—	—	—	—	—	22,331	2,836
Kagoshima ...	—	—	—	—	—	2,512	1,875	480
Total ...	79,320	22,972	84,879	20,412	65,366	11,115	1,623,064	328,323

CHAPTER VIII.—Poultry.

History and Existing Condition—Breeds and Number—Eggs.

I. HISTORY AND EXISTING CONDITION.

Poultry in Japan principally comprises hens and cocks, with ducks, geese, and turkies coming next, but at a great distance. The only fact known about poultry in former times was that besides being used for the flesh, cocks were reared for cock-fighting.

Coming to recent times we may mention the engagement of a Chinese expert about 1876 by the Bureau of Agriculture in order to teach a number of persons concerned in the art of artificial incubation of fowls and ducks. Pamphlets were distributed all over the country by the authorities with regard to this method of incubation and also with regard to keeping fowls generally. Meanwhile the public began to take a great interest in the business, and at one time the importation of foreign breeds became highly fashionable. However as the business was conducted in a somewhat speculative manner it soon suffered a collapse. At present the business is not so popular as it was once, but at least it rests on a sounder basis. The reproductive powers of fowls too are considerably better than they were before, and a considerable improvement in the breeds has been effected. An increasing demand on eggs has recently arisen and the import of a large quantity of cheaper Chinese eggs is seriously affecting the prosperity of the Japanese poultry business. As a subsidiary enterprise of the farmers the business does not yet occupy a position of any great importance.

II. BREEDS AND NUMBER.

Before the importation of foreign breeds commenced, the original farm-fowls consisted of four or five varieties among which may

be mentioned a dwarfish kind called Chabo, a longtailed fowl, a fighting cock also reared for its flesh. There were also two kinds of foreign breeds that had been imported during the Tokugawa epoch. Subsequently specimens of almost all the noted foreign breeds have been brought in but their descendants are now rarely of pure breed.

There are only two breeds of ducks, one being the "white-necked" and the other "green-necked." Goose and turkey are not yet reared to any large quantity, they being mostly intended for use of foreign residents. At the end of 1901 the poultry returns stood thus:—

	Number.	Value.
Barn-fowls	10,847,853	3,438,561
Ducks	257,796	128,438
Turkeys	2,021	3,189
Geese	9,169	7,109

III. EGGS.

The eggs produced at home are far from supplying home demand, in consequence of which the quantity of Chinese eggs coming in is steadily on the increase. Subjoined are figures showing the quantity produced at home and of the import from China.

OUT-PUT AT HOME.

	Number.	Value. *yen.*
Barn-fowls	533,406,628	6,631,481
Ducks	7,823,734	131,496
Turkeys...	65,996	4,056
Geese	327,716	8,495

IMPORT FROM CHINA.

Year.	Number.	Value. *yen.*
1898	46,522,000	490,462
1899	67,280,000	823,088
1900	95,830,000	1,238,661
1901	99,294,000	1,293,565
1902	92,133,000	1,193,0[illegible]

CHAPTER IX.—Bee-Keeping.

The earlist record about bee-keeping in our history is one regarding the present of honey bees by a Korean Prince to the Empress Kotoku (642-645 A.D.). At present the honey is produced at Iyo, Tosa, Chikuzen, Higo, Tamba, Tsushima, Shimane, Kai, Chikugo, etc. The output cannot be accurately known, but it is roughly estimated at about 200,000 *kin*.

Breeds.—Generally speaking, there are three varieties of honey bees now in Japan, they being the Japanese breed that originally came from Korea, the Italian variety, and the Cyprian variety. The first is hardy but is far inferior to the foreign breeds in the amount of the honey secreted. The Italian breed, though an excellent collector of honey, cannot stand the cold so well as the Japanese bee, so that it can be kept in the southern districts only. The last variety is best adapted for Japan, both in the large quantity of honey it secretes and on account of its hardy character.

As yet the business of bee-keeping remains in a primitive condition, and both in the keeping and the refining of honey very little care is exercised by our farmers. A little more care employed would be sure to make this business very profitable.

CHAPTER X.—Farmers' Subsidiary Work.

The question of how best to utilize what we may call hours of enforced idleness is one of special importance for the farmers in such a country as Japan where farming is carried on an extremely limited scale and with such attention to minutiæ as to leave very little room for further expansion, and where farming work is generally suspended on account of climatic condition during winter. The kinds of subsidiary occupations pursued by our farmers are therefore many. They may be given as follows:—

1. The manufacture of starch, *konnyaku*, *sōmen* (kind of maccaroni) frozen buckwheat maccaroni, frozen *mochi*, frozen *tōfu*, frozen *konnyaku*, jam, dried persimmon fruits, dried peels of gourd, dried radish peel, etc.
2. The manufacture of mat-facing, straw-plaids, mats used for rearing silkworms, matches, cords, nets, willow-paskets' rush head-gear, straw raincoats, head-gear made of hasks of bamboo-sprouts, coir-ropes, straw-ropes, charcoal-bags, straw-hats, etc.
3. Weaving of fabrics, spinning of yarns, manufacture of silk, paper, and various kinds of basket-work.
4. Extraction of oil, aquiculture, salt-making, charcoal-burning, lime-making, camphor-refining, etc.

In some cases farmers divide their time and labor almost equally between those "odd jobs" and their regular farming work, being therefore partly farmers and partly manufacturers of goods.

CHAPTER.—Agricultural Products in Commerce.

EXPORTS AND IMPORTS.

As is quite natural, the throwing open of the country to foreign commerce has had different effects on the prosperity of different agricultural products, for while some, such as silk, tea, etc. have been raised to a state of extraordinary development by the foreign demand for them, others such as cotton, indigo, etc. have suffered seriously from the competition of foreign products.

A. EXPORTS.

The chief items of agricultural products for export and the amount thereof are given below in unit of thousand: –

		1898 (in thousand.)	1899 (in thousand.)	1900 (in thousand.)	1901 (in thousand.)	1902 (in thousand.)
Rice	picul.	1,050	2,178	933	1,301	1,269
	yen	5,920	10,282	3,576	6,908	6,679
Raw Silk	*kin*	4,837	5,946	4,630	8,697	8,078
	yen	42,047	62,627	44,657	74,667	76,859
Noshi and Waste Silk	„	4,091	4,388	3,900	4,789	5,193
	„	2,655	4,074	4,161	4,468	5,713
Green Tea	„	25,845	27,998	2,261	26,651	27,730
	„	7,862	7,699	7,998	7,819	9,825
Other Tea	„	4,981	6,733	5,978	6,596	5,029
	„	353	799	931	1,034	658
Matting	*yen*	3,938	3,717	3,310	5,431	6,772
Lily Bulbs	No.	5,100	6,083	7 048	8,979	8,331
	yen	128	258	257	266	238
Ground Nuts	*kin*	3,012	3,298	5,305	8,817	8,089
	yen	115	144	240	404	358
Ginseng	*kin*	356	402	402	419	363
	yen	423	476	407	452	369
Mint	„	45	76	51	120	113
	„	158	268	228	545	628
Straw Plaids	bundles	5,961	7,134	8,802	6,974	8,611
	yen	2,404	2,770	4,025	2,986	2,938
Wood Wax	*kin*	3,798	4,569	3,702	4,049	4,216
	yen	609	642	561	610	789
Cotton	„	824	743	1,009	950	754
	„	218	209	323	308	282

The export of minor items worth mentioning in 1902 was as follows: —

	kin.	*yen.*
Chillis	804,699	84,889
Oranges	3,255,743	114,863
Potatoes	7,882,380	158,716
Vegetables and Fruits	—	182,106
Plants, Trees, Shrubs, etc.	—	122,459
Seeds	—	79,121
Snake-gourd	3,957,602	118,987
Ginger	2,303,512	317,643
Feathers	365,030	81,171

Rice.—The quantity of rice going abroad being naturally determined by the condition of the crop at home and the condition of the foreign markets, it varies considerably according to the year. The places of destination, though not firmly fixed, are generally Hongkong, Germany, Australia, England, the United States of America, etc. The rice grown in Kyūshu and the districts bordering the Inland Sea is most acceptible to foreign consumers.

Raw Silk.—Raw and waste silk constitute about 30 per cent. of the bulk of the export trade. The United States is the best customer of our silk, taking about 60 per cent. of the entire export, followed by France, Italy, etc. This important export product chiefly come from the central part of Honshū.

Tea.—Tea comes next to raw silk as the most important agricultural product for export trade, though its prosperity has somewhat declined lately owing to the encroachment of Indian and Ceylon teas in the market of the United States, which together with Canada is the best customer for this goods. Green tea is in demand in the above two places while brick tea goes to Russia.

Matting.—Though it is an industry of comparatively recent origin, matting now occupies an important place in our list of exports. The United States is here again our best customer. Okayama and Hiroshima are the principal centers of produce.

Lily-bulbs.—These bulbs mostly go to the United States and England where they are used for producing the flower.

Ground-nuts.—The export has increased lately, the principal

markets being Hongkong, Australia, United States, etc. The fruit is either used for food or for the extraction of oil.

GINSENG.—The export is practically confined to China, and therefore its market is limited.

MINT.—The export of mint shows more or less of an increase, though that increase is necessarily confined within narrow limit. It goes to Hongkong, Germany and the United States.

STRAW-PLAITS.—This product constitutes one of the most important items of our export trade, having recently developed a marked activity, with the tendency of greater improvement of quality in future. The goods are principally exported to England; the United States, Hongkong, Australia, etc., being our next best customers.

VEGETABLE-WAX.—The market shows every sign of shortly becoming enlarged, the principal consumers at present being Hongkong, Germany, the United States, etc.

RAW-COTTON.—Korea and Siberia are the principal customers of the cotton.

B. IMPORTS.

Subjoined is the list of the principal items of agricultural products coming into Japan.

		1898 (in thousand.)	1899 (in thousand.)	1900 (in thousand.)	1901 (in thousand.)	1902 (in thousand.)
Rice	picul	11,696	1,650	2,286	311	4,509
	yen	48,219	5,960	9,021	2,878	17,750
Flour	*kin*	38,855	29,001	84,229	62,972	72,104
	yen	2,022	1,370	3,882	2,873	3,278
Sugar	picul	4,369	2,731	4,045	4,928	2,638
	yen	28,439	17,516	36,606	33,493	14,467
Beans	picul	2,406	308	1,707	1,938	1,801
	yen	7,101	8,822	4,817	5,328	4,956
Malt	*kin*	3,042	4,264	5,642	6,586	2,986
	yen	293	468	619	765	330
Raw Cotton	picul	2,453	3,472	2,608	1,579	3,486
	yen	45,744	62,210	59,471	60,650	179,784
Cocoons	*kin*	458	807	598	441	649
	yen	212	642	618	342	546
Tussa Silk Yarn Cocoons.	"	15	151	148	213	418
	"	37	375	351	433	955

		1898 (in thousand.)	1899 (in thousand.)	1900 (in thousand.)	1901 (in thousand.)	1902 (in thousand.)
Hemp	„	7,232	12,610	14,514	12,965	13,265
	„	590	1,245	1,700	1,370	1,602
Oil-cake	picul	2,101	2,795	2,280	3,477	3,070
	yen	4,614	9,791	5,696	8,109	8,670
Eggs...	*yen*	492	826	1,243	1,298	1,196
Indigo	*kin*	1,806	1,768	1,851	1,243	1,417
	yen	2,270	2,903	3,902	2,665	3,097
Wool	„	2,838	7,746	4,514	4,952	4,066
	„	1,642	4,324	3,919	3,129	3,397
Condensed Milk	dozen	174	173	300	279	377
	yen	359	389	663	646	863
Hides and Leathers ...	*kin*	2,922	3,104	2,696	3,344	3,323
	yen	587	719	656	786	813

Minor items worth mentioning in 1902 were as follows:—

	kin.	*yen.*
Butter	198,457	140,327
Margarine	143,988	51,565
Cheese	72,044	30,312
Coffee	139,377	41,857
Tea	125,396	30,469
Cotton Seeds	56,316,511	787,667
Sesame Seeds...	7,945,636	426,753
Grains and Seeds	—	1,231,170
Leaf-tobacco	—	950,816
Land, Tallow and Grease	825,045	105,886
Hairs, Bristles, etc.	220,828	294,410
Wheat	8,653,443	240,050

Rice.—Rice comes in from Korea, Tonquin, British India and Siam, especially when the rice crop fails in our country. The imported rice is generally inferior in quality and is patronized almost exclusively by the poorer classes.

Flour.—The import of flour has gone up to large figures recently, owing to the fact that the native product is not well suited for making cakes and other articles of food made of flour. The goods come principally from the United States, Canada, and Australia.

Sugar.—The import of sugar is also advancing in rapid strides, the consumption of this important article of diet having

remarkably increased of late. Brown sugar comes chiefly from the Philippines, Java, Hongkong and China, while Hongkong is the largest importer of the refined variety, followed by Germany and Hungary.

Beans.—As raw material for making soy, *tōfu*, *miso*, also as manure the import of the goods amounts to a large quantity. However the figures are gradually falling off owing to the activity recently of bean cultivation in Hokkaidō.

Malt.—The great development recently of the business of brewing beer and the insufficient supply of malt of the required excellence has led to the introduction of a large quantity of foreign malt. However, as the quality of the home-made article is gradually improving, the import may not attain any particular increase in future. Germany, Hungary, and the United States, particularly the first country, supply the bulk of this malt.

Raw Cotton.—A recent extraordinary development of the spinning business and the unsuitedness of native cotton for the purpose, has resulted in a large purchase of this raw material from foreign countries, especially from Bombay, the United States, China, and Egypt.

Cocoons and Tusser Yarn.—Both come from China, they being used by our weavers. The latter is regarded with special favor by them, owing to its low price. The import of the former has lately gone down to some extent.

Hempen Goods.—These are coming in a gradually increasing quantities from China, the Phillippines and India.

Oil-Cakes.—Of all the cakes imported into this country, bean-cakes form the bulk. The import shows an extraordinary advance, the demand of our farmers for the cakes as fertilizers having become enormous. The bean-cakes are shipped from Newchwang, and the rape-seed cake, which also comes in a greater or less extent, from Shanghai.

Fresh Eggs.—Owing to the growing consumption of eggs at home, the import of eggs from China is very large, the market being very low there. The recent imposition of a heavier tariff on the goods and the steady progress made by the poultry business at home may check any further expansion of the import.

Wool.—Wool comes from China, Australia, Germany, England, etc., the home supply of this raw material being out of proportion to the demand.

Condensed Milk.—This comes from England and the United States. No large increase of the import in future is probable, in view of the fact that the diary industry is developing steadily at home.

Hides and Leathers.—These come, especially the former, from Korea most, and then from China, India, etc.

Cotton and Sesame Seeds.—These are imported for the expressing of oil from them but their import is falling off. The former is chiefly intended to produce fertilizer from and the latter is used for obtaining cooking oil. Both come from China.

In short, of the principal items of agricultural products exported from Japan, raw silk, tea, mats, straw plaids, and rice figure most on the list, while on the other hand rice, flour, raw cotton, sugar, indigo, oil-cakes, etc. are the principal items on the import list of agricultural products.

CHAPTER XI.—Agricultural Legislation.

Provisions Relating to Protection and Encouragement—Provisions Relating to Calamity.

I. PROVISIONS RELATING TO PROTECTION AND ENCOURAGEMENT.

Agricultural Societies. — For the better protection of agricultural interests and the encouragement of the industry, our farmers established early in the era agricultural associations in many parts of the country. However it soon became evident that those organizations could not render effective service unless the Government extended to them some help. Consequently coming to June, 1889, the Law of Agricultural Societies was promulgated with the consent of the Diet, and the Rules of Operation of the same in the following year, the legislature providing among other things a grant of not more than 150,000 *yen* every year to the societies established in conformity with the law. The creation of a society was of course left to the discretion of the farmers themselves, the only interference exercised by the local authorities being the forcing of all those who had not already joined a society established in their own districts to join it. There were in the 1903 fiscal year 46 agricultural societies throughout the country, their expenses amounting altogether to 511,021 *yen* with State aid aggregating 148,496 *yen*.

Besides those societies which were prefectural organizations, there were 561 subordinate societies in rural districts or cities, and over 10,000 in towns and villages.

Industrial Guilds.—The extension of a similar protection to small farmers and small manufacturers was also considered necessary. After repeated failures to devise some legislative measure having for its object the giving of such protection, the Law relating

to Industrial Guilds was at last promulgated in March of 1900 with the consent of the Diet.

As only a short time has intervened since the enforcement of the Law, no specific statement may be given here, except that the provision is likely to prove extremely useful. The number of guilds established under the Law was as follows according to the returns on Oct. 15, 1902:—

Kind.	Limited Liability.	Guarantee Liability.	Unlimited Liability.	Total.
Credit	87	6	218	311
Sales	31	3	4	38
Purchase	30	3	38	71
Produce...	5	—	5	10
Combining more than two Services ...	24	1	26	51
Total...	177	13	291	481

Note:—In the table the small number of guilds organized by people who are not themselves engaged in farming are included.

Even prior to the enforcement of the Law a large number of similar guilds existed. In 1898 these numbered 346 with 64,388 members and possessing property valued at 968,141 *yen*. Of these the silk sales guilds were most important, and some of them undertook the sale of silk to the value of about 3 million *yen* a year. Some of them, too, were established as far back as 230 years ago. Then there are several hundred guilds, organized on the rules laid down by the celebrated economist and moralist Ninomiya.

The industrial guilds being considered as corporations of public utility are exempted from the payment of the Income aud the Business Taxes, while those established on the limited liability system are entitled to get a loan from the Local Hypothec Banks without security.

As the state of things in Hokkaidō is different from that prevailing in the rest of Japan proper, special legislation of this kind was enacted for it in 1900.

Staple Products Guilds.—The existence of guilds organized by business people engaged in the same or in kindred pursuits was recognized several centuries ago, as for instance, in the

ease of the stock-brokers in Yedo (now Tokyo) and Ōsaka. In consequence of these guilds tending to become monopolies, they were once suppressed but this ban was removed after the Restoration. During the space of about thirty years extending to 1900 when the existing Law for Staple Products Guilds was enacted, the history of the organization of guilds by various business interests is exceedingly complicated, owing to the fact that while the necessity of such organizations was universally admitted their imperfect supervision by the local authorities soon destoryed their utility in regard to their original aim of preventing the production of inferior goods and also of giving general protection to the interests. The promulgation in April of 1897 of the Law relating to Staple Export Commodities Guilds marked a new and important departure in the efficiency of legislation of this sort. Indeed this enactment was regarded as imperatively necessary owing to the production and export of an inferior class of goods, and to the consequent injury done to the prosperity of the various branches of trade. Three years after, the scope of this law was expanded, till it took the shape of the existing legislation. A history of the guilds established by the silk interests is similar, for as they constitute one of the most, if not the most, important interest in the national economy, the people engaged in the business were impelled to combine for their common interest and prosperity. At last with the promulgation of the existing law, the special provisions previously established to regulate the silk guilds were abolished, so that these interests now exist under exactly same law as the others.

The existing agricultural guilds number 112 of which 103 are devoted to sericulture and sericultural industries.

Adjustment of farm-land.—As the work in connection with the object of adjusting farm-lands has already been described, it is sufficient to state here that the law for regulating this work was promulgated in March of 1899.

State aid to Local Agricultural Experiment Stations.—The result of maintaining the local experiment stations on local disbursements alone was not quite a success so far as their efficiency was concerned, and the Government has now made a special provision for granting pecuniary aid to those farms, this provision

governing also local agricultural institutes and local experimental fishery laboratories and institutes. This grant-in-aid stood as follows at the end of the 1902 fiscal year:—

	No.	Total Amount of Aid.
Local Experiment Stations...	35	67,000
„ Farming Institutes	4	3,200
„ Experimental Fishery Laboratories...	21	40,100
„ Fishery Institutes	4	5,200
Total	64	115,700

Silk Conditioning.—The Silk Conditioning Houses having been described in the preceding part, it is enough to state here that the rules in connection with this official business were enacted in June, 1895.

Rules Relating to Tea Guilds.—The Rules relating to Tea Guilds deserve special notice, as they have proved highly efficient for preventing the appearance of the inferior tea that too frequently impaired the credit of this staple in foreign markets, and in enabling it to hold its ground against the competition of Chinese and Ceylon teas.

The enactment was made in 1884 at the instance of the conference of tea dealers and manufacturers held in Kobe in the preceding year. The Rules do not apply to such prefectures as Gunma, Yamanashi, Nagano, Fukushima, Miyagi, Iwate, Aomori, Akita, Yamagata, Kagawa, Okinawa and Tochigi where the tea industry is of insignificant proportion.

Rules Relating to Cattle and Horse Guilds. — Very strict rules were enforced during the Tokugawa Regency in districts famous for the production of cattle and horses, and especially were the rules for the breeding of horses for military use strict. This salutary custom fell, however, into desuetude with the abolition of the Regency and the re-establishment of the Imperial régime. In 1882 or thereabouts the establishment of cattle or horse guilds by the people was encouraged, but the regulations were far from being efficient as they were before. Finally, in February of 1900 the existing Law relating to Cattle and Horse Guilds was promulgated with the consent of the Imperial Diet, and this Law in conjunction

with the work in the State Studs and Depots already described is now conducing in a marked manner to the interest of the industry. The number of guilds existing at present is as follows :—

Cattle Guilds...	25
Horse Guilds	137
Cattle and Horse Guilds	50
Total	212

Rules Relating to the Control of Breeding Bulls and Stallions.—In accordance with the Notification issued in 1885, rules for controlling breeding bulls and stallions were left to be drawn up by different local offices. Thanks to the beneficient result of this control the breed of our live stock is gradually improving, half breeds and foreign breeds superseding the inferior native breeds. The number of old cattle are diminishing while the stature of cattle and horses in improving. The following data will serve to make this point clear :—

(1) NUMBER OF BREEDING BULLS.

Year.	Native Breed.	Foreign Breed.	Half Breed.	Total.
1897...	1,579	477	342	2,398
1898...	1,666	502	421	2,589
1899...	1,684	575	533	2,792
1900...	1,980	514	692	2,886
1901...	1,805	489	811	3,105

(2) STATURE OF BREEDING BULLS.

(The standard measure, 4.4 *shaku*).

Year.	Native Breed.		Foreign Breed.		Half Breed.		Total.	
	Above.	Below.	Above.	Below.	Above.	Below.	Above.	Below.
1897	110	1,469	240	237	99	243	449	1,949
1898	128	2,538	306	196	134	287	568	2,021
1899	167	1,517	326	249	187	346	680	2,121
1900	197	1,483	298	216	272	420	740	2,119
1901	266	1,539	329	160	427	384	1,022	2,083

Rules Relating to Breeding Stallions.—Over and above the Notification mentioned in the preceeding section the control

of breeding stallions is further regulated by a special law issued in 1897. These legislative provisions require all the breeding stallions to be inspected by competent experts and the inspection has resulted in a marked improvement of the breed, as may be seen from the following data.

(1) NUMBER OF BREEDING STALLIONS.

Year.	Native Breed.	Half Breed.	Foreign Breed.	Total.
1897	5,505	1,145	94	6,744
1898	4,397	1,317	80	5,794
1899	4,200	1,610	104	5,914
1900	3,616	1,769	141	5,526
1901	3,185	2,251	171	5,607

(2) STATURE OF BREEDING STALLIONS.

Year.	Below 4.6 *shaku*.	Above 4.6 *shaku*.	Above 4.7 *shaku*.	Total.
1897	1,505	1,788	3,271	6,744
1898	1,149	1,447	3,198	5,794
1899	1,051	1,572	3,291	5,914
1900	741	1,137	3,648	5,526
1901	626	1,014	3,967	5,607

Rules Relating to the Castration of Horses. — The earliest authentic record about the custom of castrating horses occurs in the Kyōhō ear (1715—1737 A.D.) when a large number of Persian horses were presented by some Hollanders to the then Sogun Yoshimune. The Dutchman who brought these horses was the first to introduce into our country the practice of castration as well as the foreign method of breeding horses. Coming to the present rêgime we find that both the Department of Agriculture and Commerce and the War Office began to perceive the necessity of this practice, and that while in 1880 and 1882 the former issued instructions for the encouragement of it, the latter started as early as 1877 a regular course of instruction to veterinary students. In 1883 the practice was universally applied to war horses. But the public were very slow in availing themselves of those instructions or in following the example set by the Government. The experience gained in the China war by Japan made it more imperative for Japan, however, to adopt this means for the elimination of inferior stallions, and the

promulgation of the existing Law in 1901 was the result. It is provided in this Law that with the exception of approved stallions all other stallions must be castrated at the age of three years, all the expences incidental to the operation to be paid out of the Treasury. The Rules of Operation were issued in 1902, officials were appointed in the Agricultural Bureau to take charge of the business, and finally 94 students were collected in order that they might be initiated into the art at the Military Horse Section.

Game Law and Investigations in Connection with Wild Birds.—No regular rules existed formerly for the protection of useful birds and the destruction of injurious insects, except in the single case of the crane which was the only protected bird in this country before the Restoration. It was in 1873 that regular rules about shooting and hunting were promulgated. These rules underwent repeated amendments till they finally took shape in the present Game Law that was promulgated in 1901.

The data about the licenses granted during the recent seven years are given in the following table:—

Year.	License class A.	License class B.
1895	16,376	125,189
1896	16,991	141,556
1897	16,609	174,334
1898	17,198	178,130
1899	16,966	199,808
1900	16,918	202,862
1901	11,102	102,265

Note:—Licenses of class A. are issued to those who use fire-arms while licenses of class B. are issued to those who adopt other methods of killing or capturing games.

The provisions regarding game preserves were first enacted in the present Law. These preserves number 58 in all, with a tendency to increase. The total number of common game preserves is 20, of which 13 existed under the old rules and the rest in conformity with the new.

The new Law has proved effective in checking the reckless destruction of birds due to the enormous number of sportsmen in the country, as is shown by the foregoing table which records the

sudden fall of the number of shooters by about 50 per cent. during the last two years. However no conclusive result can be arrived at on this point until after the lapse of several years more.

Several other new provisions were enacted by the new Law, such as the absolute prohibition both of shooting and hunting in the breeding season, the establishment of game preserves and other such restrictive measures. In future, therefore, the breeding of birds will be more satisfactory than it was during recent years.

Wild birds have, it need hardly be said, an important relation to farming and also to forest planting, not to speak of the fact that their feathers and flesh are useful for various purposes. In view of this, investigations into the varieties of birds found in Japan were started in 1894, these investigation covering the following points:—

1. Kind of food.
2. Geographical distribution.
3. Season of pairing, of laying, etc.
4. Power of multiplication.
5. Natural enemies and friends.
6. Season and extent of migration.
7. Mode of destroying injurious birds.
8. Mode of multiplying useful birds.
9. Relative merit and demerit of the various methods of shooting and hunting.

II. PROVISIONS RELATING TO CALAMITY.

Supervision of Manure Business.—It is a natural consequence that with the progress of farming there should arise a demand for manures which are more efficacious than those naturally procurable. But farmers do not generally possess sufficient knowledge to distinguish genuine fertilizers from those that are spurious. In procuring artificial fertilizers they are therefore liable to be duped by dishonest manufacturers and dealers. Convinced of this fact the Local Office of Nara enforced in its jurisdiction rules requiring the dealers to organize themselves into a guild. The result obtained in Nara-ken was so satisfactory that the Government, at the instance of the Diet, enacted in December of 1901 a law for controlling fertilizers.

This Law compels all those who manufacture or deal in fertilizers to first get a license, to submit samples of their goods to the proper officials for inspection, and also to guarantee the alleged composition of their fertilizers. At the same time the Government has distributed, for the better enforcement of the regulations, 116 fertilizers inspectors among different districts and has also appointed 20 chemists in the State Experimental Farms to take charge of the analysis of fertilizers. The former necessitated the disbursement by the Government of 109,729 *yen* and the latter of 38,597 *yen*.

Destruction and Prevention of Injurious Insects.—The appearance of injurious insects has often proved disastrous to our farmers. One such case was the devastation wrought by locast in Tokachi, Hokkaidō, from 1880 to 1882.

The prevention of damages done to the crops by injurious insects requiring first of all the united efforts of all the farmers living in any given vicinity, the Government first issued a Notification on this point in 1885 and this was made more perfect in its working in 1896. The appearance of the rice-plant hopper in the very next year throughout the country and the decrease, in consequence, of the year's harvest of rice by 13.8 per cent. of the normal yield, with an extraordinary advance of the market price of rice, at once roused the Government and people to the necessity of devising some preventive measures. Their efforts were crowned with success for no such calamity has since visited the country.

Subsequently the infliction of injuries on the crops by parasitic fungi caused the Government to further amend the regulations and to make them cover, besides injuries from insects, injuries from such lower organisms.

Inspection of Silk-worm Eggs. — The regulations relating to inspection of silk-worm eggs were first issued in 1886. They left the inspection to be done at the discretion of each locality. This arrangement proved comparatively unsatisfactory and an amendment was subsequently effected as to make the regulations uniform for all the provinces and to make the inspection compulsory not only in the case of the spring breed of silk-worms but also in that of the summer and autumn breeds. The cost of inspection and the incidental expenses come from the different localities, the Govern-

ment confining itself to giving more or less pecuniary assistance, as shown below :—

Fiscal year.	Inspection Expenses.	Aid by Government.
	yen.	*yen.*
1898	259,817.331	75,234.719
1899	240,277.826	69,600.831
1900	238,837.836	74,124.380
1901	321,403.364	99.496.172

Note :—The whole of the inspection expenses for Okinawa and Hokkaidō (until the 1900 fiscal year) came from the Treasury.

Epidemics of Domestic Beasts. — Owing to the presence of various deterrent causes preventing any widespread development of stock-farming, and owing also to the mountainous character of the country, the appearance of any serious epidemic among domestic animals was a thing unknown in the olden days. It was when the rinderpest spread with terrible virulence in Siberia early in the era, that the Government first issued a Notification about the prevention of epidemics beasts. Coming to 1872 we find that rinderpest appeared in various places, and that it re-appeared in 1874 and 1875, while another disease, anthrax, making its appearance in Saitama-ken, in 1881. On each of these and on all similar occasions, measures were adopted for preventing the spread of the epidemic and for compensating the owners of affected animals that were slaughtered. The frequent introduction of afflicted beasts from the continent, especially from Korea, in spite of the various preventive measures taken, led the Government to establish on one occasion special inspection offices for its own use at Fusan and Jinsen, in Korea, in order that it might inspect the cattle shipped there for this country. Such offices were also established at Nagasaki, Kobe, and Yokohama, to inspect the cattle as also the bones and hides coming from Korea, Siberia and Shanghai. Finally by the Notification issued in April of 1900 the stations at Kobe and Nagasaki were made permanent (they had been only temporary at first) and the stations at the other three places were abolished. The following table shows the returns at the two permanent

offices and the expenses disbursed by the Government on account of the epidemics among domestic animals :—

KOBE INSPECTION OFFICE.

Fiscal year.	No. of Cattle.	No. of Sheep.	No. of Bundle of Hides.	No. of Package of Bones.
1898	100	580	2,655	171
1899	44	1,143	11,007	311
1900	96	1,112	7,661	327
1901	433	977	11,109	5,937

NAGASAKI INSPECTION OFFICE.

Fiscal year.	No. of Cattle.	No. of Sheep.	No. of Bundle of Hides.	No. of Package of Bones.
1897	—	42	—	10,998
1898	582	711	1,632	29,822
1899	419	2,225	7,354	34,501
1900	594	1,779	6,799	67,079
1901	1,569	967	22,231	130,998

DISBURSEMENTS FROM THE TREASURY ON ACCOUNT OF CATTLE PLAGUE, ETC.

Fiscal year.	*yen.*	Fiscal year.	*yen.*
1896...	64,565.021	1899...	26,061.475
1897...	23,369.522	1900...	71,465.922
1898...	21,084.619	1901...	43,793.753

Since the establishment of the inspection offices, it was only once at Nagasaki, and that time through the negligence of a foreign steamer, that the country suffered from the introduction of afflicted beasts, the entry of such having been stopped in all other cases.

Prevention of Tuberculosis in Domestic Animals.—The prevalence of tuberculosis among the imported cattle and half-breeds has grown formidable, as shown in the following slaughter-house returns of Tokyo :—

Year.		Half-Breed.			Foreign Breed.		
		Cow.	Bull.	Total.	Cow.	Bull.	Total.
1894	No. of cattle slaughtered	734	284	1,018	6	10	16
	No. of tuberculous cattle	322	105	423	2	4	6
	Per cent. of tuberculous cattle ..	43.86%	36.97%	41.97%	33.30%	40%	37. 5%
1895	No. of cattle slaughtered	783	222	1,004	1	5	6
	No. of tuberculous cattle	358	91	449	1	3	4
	Per cent. of tuberculous cattle...	45.77%	40.99%	44.72%	100%	60%	66.66%
1896	No. of cattle slaughtered	897	215	1,112	1	1	2
	No. of tuberculous cattle	347	36	383	1	—	1
	Per cent. of tuberculous cattle...	38.46%	16.74%	34.44%	100%	—	50%
1897	No. of cattle slaughtered	1,265	346	1,611	—	1	1
	No. of tuberculous cattle	344	47	391	—	1	1
	Per cent. of tuberculous cattle...	27.19%	13.58%	24.27%	—	100%	100%
1898	No. of cattle slaughtered	1,888	743	2,631	—	1	1
	No. of tuberculous cattle ...	585	85	670	—	1	1
	Per cent. of tuberculous cattle...	30.98%	11.44%	25.46%	—	100%	100%

As shown in the above table, of the 5,791 cattle of either foreign or half breed that were slaughtered during the five years under review, no less than 2,332 were affected by tuberculosis, that is to say, 42.7% of the whole. A similar state of things may probably exist in other places, but reports of this sort are not yet accurately known. This disease appears, however, to be rare, if it exists at all, among the indigenous cattle.

The control of cattle suffering from this disease being imperatively necessary both for the improvement of the cattle and for the sake of the public hygiene, a law for preventing tuberculous cattle was promulgated in 1900.

Accordingly inspection is enforced at Yokohama, Kobe and Nagasaki over imported cattle, the object of the inspection being to ascertain the presence or absence of any tuberculous disease in such cattle. Here are the returns for 1901.

	No. of Cattle Inspected.	No. of Tuberculosis. Cattle.
Yokohama	37	—
Kobe	207	4
Nagasaki	988	6

As the Law for the Prevention of Tuberculosis in Cattle came into full force in July, 1903, the disease may be stamped out in the near future.

To provide a staff of qualified inspectors at all places of importance, the Government decided to train about 200 such men during the 1902 and 1903 fiscal years. The first batch of 35 students, all of them qualified to secure a license as veterinary surgeon, were admitted in September of 1902. The course extends over two months during which the pupils attend lectures on bacteorology, climical examination, post-mortem examinations and dissection practices, examination of milk, flesh and urine, and the rules relating to epidemic diseases inflicting domestic beasts.

PRIMARY INDUSTRIES.

SECTION II.

FORESTRY.

Introductory Area and Ownership of the Forests—Forest Zones and Sylvicultural Conditions - Adjustment of the Forests—Exploitation and Treatment of the Forests—Forest-Planting and Transport—Wood-Produce—Official Supervision of the Forests—Education—Legislative Measures.

I. INTRODUCTORY.

THE forests of Japan, her natural ornament, which occupy more than one half the area of the Island Empire, would appear to have exerted an inspiring influence upon the mind of her inhabitants, for their love of forests and the luxuriant sylvan growth is observed to be almost intuitive. We are also inclined to think that the Japanese may owe their patriotism and aesthetic sense to the profoundly sympathetic influence the forests seem to have exercised upon them. They are instinctively aware of their duties,—so to speak—towards the forests as is indicated by the endeavors they never spare to meet the ever increasing demand for the produce of the forest, to change them in accordance with the new requirements and to maintain their supplies permanently.

The forests of Japan, had, while the country was secluded, maintained their primitive character, but with the Restoration the forests underwent a revolution in the extent and modes of their utilization. Besides a considerable increase at home in the demand for timber and fuel not only in connection with industrial and min-

ing enterprises and for ordinary building purposes, but also for use as railroad sleepers and telegraph poles as well as for the manufacture of the various wood articles and paper, the recent development in the carrying trade has caused the traders in forest produce to seek customers abroad, especially in China and Korea. All this has in recent years exercised an unequal influence on Japanese forests so that, while, on the one hand, there are districts where reckless felling and all the evils resulting from it have obliged the Government to exercise control as to cutting, on the other hand there are in some parts of the country vast areas of wooded-land maintaining all its primitive features unaltered.

This anomaly has brought to light the fact that the plans hitherto followed in the management of forests are no longer adequate to meet the future increase of the population and the requirements of the new civilization, but points to the necessity for striving to develop to the full the natural capabilities of the forests by increasing their productive powers by the application of regular technical methods.

II. AREA AND OWNERSHIP OF THE FORESTS.

THE AREA.—According to the latest statistics the area occupied by forests is 23,087,365 *cho*, i.e. over 59 per cent. of the whole area of the country which measures 24,794.36 square *ri* or 38,559,078 *cho*. (The area of Formosa and the Pescadores is not included in the above computation, not having yet been ascertained.)

Protection Forests.

Of the two divisions in the Japanese forests, "Utilization Forests" and "Protection Forests," the latter are further divided into two kinds, "Absolute" and "Ordinary." The area of the Protection forests in 1890 was 689,469 *cho* of which 4,803 *cho* belonged to the "Absolute" class and 684,662 *cho* to the "Ordinary" category. All the other forests belong to the Utilization class, measuring 22,397,896

Utilization Forests.

cho. Those forests exclusively maintained for the utilization of their produce are left to be managed by the owners as they like. Those forests of this class which belong to the State and Imperial Household are generally managed and tended in accordance with modern technical rules and bid fair to become greatly improved with regard to their productiveness. But those owned by the people, with the exception of a very small number, are entirely left to nature, nothing being done to increase their utility.

Ownership of the Forests.—The areas of the forests of these different ownerships are as follows:—

	cho.
States Forests	13,125,320
Imperial Forests	2,091,785
People's Forests	7,870,260

The people's forests comprise those owned by Shinto and Buddhist temples, communes and private individuals, their respective areas being as follows:—

	cho.
Shinto and Buddhist Temple Forests	167,629
Communal Forests	1,715,754
Private Forests	5,987,877

State Forests.—The State forests are managed by the Government and by the Imperial Household Department, while over the people's forests the Government merely exercise administrative supervision in accordance with the provisions of the Forest Law.

Of the State forests measuring 13,125,320 *cho*, 7,632,831 *cho* are under the jurisdiction and management of the Agricultural and Commercial Department of the Imperial Government, but 5,492,489 *cho* in Hokkaidō are placed under the control of the Home Department. The forests in Formosa are maintained according to special laws and regulations by the Governor-General under the supervision of the Minister for Home Affairs.

These figures are not, it must be owned, the result of accurate scientific surveying, the statistics relating to the State and Imperial forests being taken from the Government Forest Register compiled according to the Provisional Regulations for Government Forests of 1875 and those relative to the people's forests from the Land Register prepared by the Treasury Department for the purpose of taxation in accordance with the Regulations for the Revision of the Land Tax established in 1873. These registers being based on very rough surveys the figures above mentioned will have to be more or less modified, when the work of forest adjustments and investigation now going on shall have been completed. Inaccuracies are especially likely to be found in the case of the people's forests for, as the years went by, there must have been lands converted from other classes of land into forests and from forests into farm or building lots.

In this period of renovations the areas of forests are subject to changes both absolutely and in respect of proprietorship, as transfers and conversion into other classes of estates are taking place and such changes will not cease until the completion in 1904 of the work of the special State forest adjustment undertaken by the Government.

Imperial Forests.—In 1899 States forests in Kanagawa, Yamanashi, Shizuoka, Nagano, Gifu, Aichi, Miye, Aomori, Iwate and Tochigi prefectures and Hokkaidō, to the extent of 3,649'848 *cho* in all, were transferred to the Imperial Household to constitute he Imperial forests. These forests being similar to State forests in their nature and features, it goes without saying that some of them are paying concerns, while others are not. In 1892 the Household Department commenced the work of investigating the Imperial forests, as the result of which some of them have been disposed of from time to time since 1898. In 1889 over 1,370,000 *cho* in Hokkaidō were returned to the State control, while some forests were resold to such temples, Shintō or Buddhist, as had formerly been their possession, in compliance with the regulations established for the special disposal of such forests. Besides, some of those that had been classed as Government property, through error, on

the occasion of the land tax revision in the early year of Meiji were restored to their rightful owners. Such transfer not having yet been completed, it will be years before the area of the Imperial forests becomes fixed. From 1889 to 1900 this kind of his Majesty's property increased by 59,533 *cho* while decreasing by 1,453,-342 *cho*, so that the clear loss was 1,383,809 *cho*. The increase was principally due to the correction of the former computation of areas and to the declaration of lands presenting a sylvan appearance as forests, while the chief causes of the decrease were the expropriation of some forests in Hokkaidō and the reclamation and sale of some forests for conversion into arable land.

The Imperial forests are divided into two classes: "Hereditary" and "Ordinary." The former comprises such forests as are so thickly wooded and extensive as to furnish enough material for a regular working plan framed on the basis of economical considerations. Such forests are made extremely difficult of conversion by the Imperial House Law. Hence changes of areas rarely occur except in the forests belonging to the other class. In 1901 there were 997,250 *cho* of the Hereditary class and 1,100,536 *cho* of the Ordinary class.

Private Forests.—The forests owned by civic corporations, religious establishments and private persons are now subject to greater and more frequent changes than the State and Imperial forests because of the recent slackening of Government control over them and the vicissitudes in the economic conditions of the country. And the decrease of the forest area since the Restoration is mainly due to the reckless felling of woods owned by private persons. We have no statistics showing the extent of such reduction, but see them indirectly shown in the increase of land under cultivation and pasturage. Private forests, however, have increased to a certain extent by the purchase of some State or Imperial property.

Plains and Moors.—Besides the forests above mentioned there are in this country vast areas of land the uses of which are yet undecided. They are known by the name of "Genya" (plains and moors) as distinguished from forests, being a class of land established on the occasion of the land tax revision. In the early years of Meiji the classification of lands was made merely with

regard to their features, without paying any attention to their position or nature or to the relations they bear toward each other. Thus the division of land into Forests and "Genya" seems to have been based on no other consideration than the presence or absence of trees. At present there are over 2,645,322 *cho* of "Genya" which, we may observe, will in the near future, except such portions of them as may from their nature be made into pastures or cultivated land, be mostly converted into forests. This class of land is especially abundant in the northern provinces of the main island and in Hokkaidō. Some of the "Genya" already present quite a woody appearance and bid fair to become perfect forests in no distant futures.

Of the above-mentioned area of the "Genya" 1,434,666 *cho* belong to the State; 157,174 *cho* to His Majesty the Emperor, the remaining 1,053,482 *cho* being either private or communal property.

Distribution of Forests.—Forests are found everywhere in the Empire from Formosa on the south to Hokkaidō on the north. But their distribution is varied according to the general shape of the country, the height of the mountains and hills and the density of the population. With the exception of a small number of forests on level ground found here and there, Japanese forests form a long string on the mountains running lengthwise through the middle of the country. In Hokkaidō the mountain ranges which traverse the whole island, lengthwise and crosswise, constitute a splendid forest-area. In the main island a chain of forests begins with Mount Hakodda in Mutsu. It runs through Rikuchū, then appears as Mount Azuma in Uzen, reaches the boundary line between Shinano and Echigo, whence it goes on to form the Kiso forests, where bending southward it runs in an unbroken line from Mount Asama in Shinano to the Imperial forests of Fuji and Amagi lying between the provinces of Kai and Suruga. In the province of Kii the range starts from Mount Kumano whence it runs to meet the woods in the Yoshino districts, Yamato. In Shikoku the line crosses the boundary between Sanuki and Awa and proceeds over the summit of Mount Ishizuchi to the forests

General features of Distribution.

in Tosa. In Kyūshu the line is continued through Mount Aso and stretches to Mount Kirishima toward the south. Thus the forests of Japan mostly lie in the mountainous districts along the backbone of the country and are scarce on the plains along the seaside. Again they are most numerous in the cold regions in the north and considerably less in the warmer regions in the south, as shown in the following table:—

Distribution as to Climate.

	Hokkaidō.	Northern Prov., Main Island.	Southern Prov., Main Island.
	cho.	*cho.*	*cho.*
State Forests	5,492,890.0	5,773,689.7	698,480.8
Imperial Forests	651,649.5	1,135,074.2	305,061.7
Private Forests	14,827.7	3,184,358.1	3,283,306.1
Total	6,158,966.2	10,093,122.0	4,286,648.6
	sq. m.	sq. m.	sq. m.
Area	5,987.03	9,765.77	5,149.73
Population	982,426	19,439,079	14,110,730
	cho.	*cho.*	*cho.*
Area of Forests per sq. m. ...	1,029.6	1,034.5	832.4
	cho.	*cho.*	*cho.*
Area of Forests per head ...	6.27	0.52	0.30
Forest Area as Compared with the Area of the whole Country	% 66	% 66	% 53

	Shikoku.	Kyūshu.	Okinawa.	Total.
	cho.	*cho.*	*cho.*	*cho.*
State Forests	336,312.2	777,718.6	46,629.5	13,125,319.6
Imperial Forests...	—	—	—	2,091,785.4
Private Forests	689,761.0	687,588.8	10,418.8	7,870,260.5
Total	1,026,073.0	1,465,307.4	57,048.3	23,087,365.5
	sq. m.	sq. m.	sq. m.	sq. m.
Area	1,227.21	2,734.08	143.98	24,998.80
Population	2,933,657	6,420,793	465,470	44,352,155
	cho.	*cho.*	*cho.*	*cho.*
Area of Forests per sq. m....	836.2	535.9	396.2	923.6
	cho.	*cho.*	*cho.*	*cho.*
Area of Forests per Head ...	0.35	0.23	0.12	0.52
Forest Area as Compared with the Area of the whole Country...	% 53	% 34	% 26	% 59

Note :—1. The above table does not include the forests in Formosa and the Kuriles, which are under investigation at present.

2. The "Northern Provinces, Main Island" in the above table comprise the districts under the jurisdiction of the Aomori, Iwate, Akita, Miyagi, Fukushima, Tokyo, Nagano, and Ishikawa Major Forestry Offices, while the "Southern Provinces" comprise the districts under the Ōsaka, Okayama and Hiroshima Offices.

The above table shows that in Hokkaidō and in the northern provinces of the main island, forests occupy 66% of the whole area, while in the Okinawa archipelago only 26% is wooded land. Kyūshu has 34% and the southern provinces of the main island and Shikoku have 53% each. Leaving Hokkaidō, which was opened up to colonization only 30 years ago out of consideration for the present, Japan has high and steep mountains in the north which are densely covered with forests. In the middle of the island, near Mount Fuji, the land reaches the utmost elevation and thence toward the south-west the country becomes more and more open, with a range of hills which possesses only a few high mountains. These geographical features have had much to do with the unequal distribution of forests in the country. The difference of economical development in the various districts was also a powerful agent in this connection. In Shikoku, Kyūshu and the western portion of Honshu or the main island, where civilization made its first appearance in Japan, the people have had better means of transportation than in the other parts of the Empire, and the demand for the timber increasing in proportion to the growth of the population, forests have been rather recklessly felled. This together with the greater need than in other regions for agricultural land must have led to the present scarcity of forest land in these parts. From the standpoint of population, Okinawa with 1 *tan* 2 *se* of forest land per soul rank the lowest; Kyūshu has 2 *tan* 3 *se*; the southern provinces of Honshu, 3 *tan*; Shikoku, 3 *tan* 5 *se*; the northern provinces of Honshu, 5 *tan* 2 *se*; Hokkaidō where the population is smaller than in any other division of the Empire, enjoys by far the greatest share of forests per soul, to wit; 6 *cho* 2 *tan* 7 *se*. In districts having a dense population there are more private and communal forests, especially the former, as compared with State forests, than in districts thinly populated. In the southern provinces of Honshū we have 698,480

cho of State forests against 2,314,296 *cho* of private and communal forests, the ratio being 3½ to 1 in favor of the latter. In Shikoku this ratio is 2 to 1, while in Kyūshu the two classes of forests are of nearly equal extent. On the contrary, in the northern provinces of Honshu private forests occupy only one-half the area of the State forests. In localities abounding in private or communal forests, the State forests are all situated in remote mountain districts, the forests near market towns having facilities for the transportation of timber being owned either by private individuals or by juridical persons. All these forests except a very few have hitherto been managed without any regard to sound principles and are therefore in a very impoverished condition. Some of them have lately been classed as protection forests in accordance with the provisions of the Forest Law. It is indeed in these districts that the greatest number of protection forests is found.

Districts of Insufficient Supply.

Ill-managed forests are only too numerous everywhere in the Empire, but their producing capacity being made very small in consequence of injudicious cutting, in some districts the local forests are inadequate to meet even the ordinary demand for timber. Such is already the case in the southern provinces of Honshu and Kyūshu, where the recent development of mining and industry has produced a considerably increased demand for timber. In those parts the local forests supply little besides wood for the purpose of fuel, and timber is purchased from other districts in yearly increasing quantities. The northern provinces of Honshu and Hokkaidō are yet rich in forests both in regard to area and producing capacity, a great number of forests being still placed outside the utilization domain. There we find forests in the neighborhood of towns and villages, the produce of which being more than sufficient to meet the local needs for building, industrial and mining purpose, is exported to other districts and countries in large quantities. Thus Hokkaidō exports timber to Honshu and to China and Korea for use in house and railroad building. *Hiba* (Thujopsis dolabrata) and *Sugi* (Cryptomeria japonica) timber produced in Aomori and Akita prefectures is exported not only to Tokyo and Ōsaka but to Shikoku and Kyūshu.

III. FOREST ZONES AND SYLVICULTURAL CONDITIONS.

The geographical position and features of the land, the climate and the geological nature of the soil exercise manifold influences on the species of trees growing in such land and on their rate of growth.

Forest Zones.—Owing to her geographical formation and more particularly to her climatic condition, no place of Japan except a portion of the Kuriles group and a few high mountains, is unfit for the growth of forest trees. We have all species of such trees growing in Japan from those belonging to the Torrid zone to those of the Frigid. Thus Japan is as rich as any country in the world in her arboreal flora. Extremes of temperature are unknown owing to the peculiar distribution of land and water and to the geographical position, the annual average in Formosa being 23° C. and that of Kamikawa in Hokkaidō 5°.1. Taking the averages of the four months from April to July, (months, having, so to speak, the greatest influences on the growth of forest trees) we find that Kyūshu indicates 21°.2; Shikoku 20°.9; the southern provinces of Honshu 20°.4: the northern provinces 18°.4; and in Hakkaidō 12.°7. The annual average is seldom found even in the high mountain districts to fall below 10°C. In comparing these with Dove's recognised standard temperatures, it is found that they are higher by 1° for the summer months and 7° lower for the winter months.

Sylvicultural Geology. The land occupied by the sylvan flora of Japan has rocks belonging to almost all geological groups from the Achaean to the Cainozoic. They are different in different places and very complex in structure.

The forests in Hokkaidō mostly stand on new volcanic rocks and sedimentary rocks, such as sandstone, tuffs, and conglomerate belonging to the Tertiary system and in a limited space upon Palaeozoic rocks. The forests in the Akita and Aomori prefectures in North Japan are found upon igneous rocks of the Tertiary system. In Central Japan the mountain ranges facing the Pacific Ocean geologically belong to the Archaean and Palaeozoic groups, while the forests in the Kiso districts are flourishing upon granite and other igneous rocks and also upon rocks of the Palaeozoic group.

The forest land in the Muro districts in the province of Kii is geologically porphyry ejected in the Mesozoic era and the Yoshino forests in Yamato belong to the Archaean and Palaeozoic groups. The forests in western portion of Honshū, especially Chugoku, stand upon granite, while those in the provinces of Tamba and Tajima are found upon rocks of the Palaeozoic group. The mountains of Shikoku like Yoshino in Yamato are composed of Palaeozoic and Archaean rocks. In Kyūshu only the southern section belongs to the Palaeozoic group, the greater part being mostly composed of igneous rocks. This country while fundamentally composed of Archaean rocks has other strata upon them, which are ejectamenta from volcanoes in the different periods of geological changes. These occasional additions of igneous rocks have been so large that at present nearly one-third of the forest land in the whole country is composed of such rocks, of which the principal rock belonging to the Archaean period is granite and those that were ejacted in the Palaeozoic and Mesozoic periods are granite, porphyry, diorite, porphyrite and others. Of the ejected rocks belonging to the Tertiary and Quaternary periods there is a large number, but those covering larger aers are andesite and basalt.

These rock formations together with other requisites for the growth of forest trees are found to have exercised special influences in accordance with their density and structure upon the generation of the sylvan flora and to possess no small bearing on the formation of forests.

It is a notable fact that among the extensive forests of coniferous trees that have continued to maintain a fine appearance from ancient times, those depending on natural regeneration are mostly found upon igneous rocks, while the majority of those depending on artificial regeneration stand on sedimentary formations.

The fact that geographical and climatic conditions of the country vary in different places as stated above is favorable to the growth of various kinds of forest trees and the fact that the topographical and geological features of the country are also quite different in different places has caused a variety of forest growths to spring up. As it is, no less than eight hundred species and varieties of forest trees are found to be well suited for culture here. But at the

present stage of the development of forest work in this country the economy of forest management does not allow to attach any special importance to not more than ten or twelve species of forest trees.

Geographical Distribution of the Forests.—The forests of Japan are divided into four groups, viz: Tropical forests,Sub-Tropical forests, Temperate forests and Arctic forests.

Tropical Forests.—Tropical forests grow in the whole of Formosa, the southern half of Okinawa, the Yayeyama Group and and the Ogasawara Islands. From the standpoint of altitude these forests are found on Niitakayama in Formosa at places below 500 metres where the annual temperature does not fall below 21°C.

Of the tropical flora the banyan heads the list followed by several species of palms and the bamboo. The banyan tree is represented by more than 18 species, all of which are found to be capable of luxuriant growth. But this and other tropical plants do not furnish useful timber except the bamboo, several species of which are found in groves everywhere in these regions, growing with wonderful rapidity and producing huge canes, hard and strong, useful for manufacturing various kinds of utensils as well as for building purposes.

Sub-Tropical Forests.—The Sub-Tropical forest regions comprise a portion of Okinawa, the whole of Shikoku and Kyūshu and the part of Honshu lying south of 36° N.L. With reference to altitude, places lying 1,900 metres above sea level in Formosa, below 850 metres in Kyūshu and below 500 metres on Mt. Tsukuba in the province of Hitachi, Honshu, belong to this section, all these enjoying an average annual temperature of 13° 21′ C.

The Sub-Tropical trees are of numerous species and are highly valued in sylvicultural economy. As the better known parts of Japan, the "beaten tracts" as the tourist would call them, "Japan proper" as the geographer would say, have a dense population and early developed industries, they do not now possess forests enough to meet the local demand for timber. As the result of continued reckless felling that has been going on in these regions for many years, there remain only a few forests preserving their primitive features, and in Honshu it might be said that there are no such forests except within the precincts of the Shinto or Buddhist temples.

The sylvicultural characteristic of Sub-Tropical regions is that they are in possession of broad-leafed evergreens, but as the result of careless cutting and conflagrations deciduous broad-leafed species and the red pine have made intrusions changing the sylvan aspect to a remarkable degree. In accordance with the present features the forests in these regions have to be divided into three classes, broad-leafed evergreen, broadleafed deciduous and pine forests.

Timber Trees in Sub-Tropical Forests.—The species of chief importance to the sylviculturist among the broad-leafed evergreen trees growing in this zone are no more than the undermentioned:—

Camphor Tree (Cinnamomum Camphore, Nees):—Being a native of this zone, the camphor tree grows in Shikoku, Kyūshu, Formosa and the province of Kii in Honshu. This species is sometimes found forming a big forest. It grows everywhere in this zone, if the soil is clayey and fertile, especially in places facing the south and free from cold winds. In Formosa it is found as high forest, either pure or mixed, up to the height of 1000 metres above the sea level. In Kyūshu, Shikoku and the southern provinces of Honshu, old and big trees of this species are found here and there, thanks to the time-honored custom of using them as ornamental groves of both Buddhist and Shinto temples. The timber is somewhat hard and lustrous and has a peculiar odor. It is prized for use in making valuable articles of furniture as well as for ornamental purposes. It lasts well in water and has been valued from ancient times in shipbuilding. In recent years the demand for it as material for the production of camphor valuable in the various branches of industry has very largely increased and forests have been planted both by the Government and by private persons.

Tsuge (Boxus Sempervirens, var. Japonica, Mak.):—This tree even in the largest specimen measures not more than 50 centimetres in diameter and 15 metres in height. The timber is exceedingly hard and close and fine grained, so that the year-rings can hardly be distinguished. The inner wood is lustrous and pretty and is used not only in fine sculpture but in the

making of valuable articles and nice rules and instruments because of its freedom from shrinkage or expansion, whether wet or dry. The tree grows in Kyūshu, Izu and other provinces, especially in the Kawara and Koshoyama State forests in Kyūshu and in the private forests in Mikura and Miyake islands in Izu. Is a shade-loving tree and grows well in calcareous soil. The young trees are liable to frost damage, hence they must be made to grow under protecting trees. Reproduction by means of planting young shoots or the insertion of sprigs.

Ubame-gashi (Quercus ilex. var. phillyrevides, F. r.):— The several varieties of *Kashi* (oak) are the most widely distributed of the broad-leafed evergreens. The *Ubame* is found in the southern provinces of Honshū, in Awa, Kazusa and Shimōsa, in Kii and in the southern part of Shikoku. On the shores of Tosa and Kii, they are found growing in pure woods, but in other places mixed with other varieties of *Kashi*. The timber is white with a shade of yellow, is the hardest and heaviest of all timbers produced in Japan. Is used in house building where hardness and strength are required, but the chief use is in charcoal making. Considered as the best fuel wood in Japan.

Ichii-gashi (Quercus silva, Bl.): *Shira-gashi* (Quercus vibrayeana. F.r.): *Aka-gashi* (Quercus acuta, Thumb.) :—

These three species are the most extensively utilized of all broad-leafed trees. The timber closely resembles that of the *Ubame-gashi*; but its growth is quicker than the growth of trees of that species. Is valued in the making of the handles of agricultural and other tools and implements; also in making wheels and rudders. The *Ichii* is sometimes found growing so big as 55 centimetres in diametre and 30 metres in height, the bole measuring 15 metres. Under the old régime the wood of this tree was highly prized for handles of spears and in the several clans there were strict regulations forbidding the felling of trees of this species. Grows in Kyūshu, Shikoku and the southern provinces of Honshu. Pure woods are rare; found mixed with other species of *Kashi*. Very widely distriduteb;

fond of shade and grows well under standard trees. This tree is reproduced either naturally or by planting.

The deciduous broad-leafed trees belonging to this zone are mostly found in planted woods, principal species being *Kunugi*, *Konara* and *Shite*.

Kunugi (Quercus serrata, Bl.):—This species ranks high among Japanese trees in affording excellent firewood; ranks next only to the oak for use in making charcoal, the far-famed Sakura and Ikeda charcoal being made from this wood. Not found in mountain regions. The home districts of these trees were limited to the neighborhood of the province of Settsu and a part of the Musashi plain. But the trees being easily made to form a coppice under a short-term rotation founded on very economical calculations, they are now found everywhere in the country planted as private property, except in the northern half of Honshu and the whole of Hokkaidō. The bark contains tannin and is therefore used for dyeing purposes and in the curing of skins. The wood is also extensively used as logs for growing thereon *Shiitake*, an edible mushroom.

Konara (Quercus glandulifera, Bl.):—Also valued as a firewood and charcoal yielder and commands a large sale. Found as a principal tree in natural mixed forests in the hilly and mountainous districts of Honshu, covering immense tracts; also found in Hokkaidō. Like *Kunugi* it is somewhat fond of light and may grow in any land holding a suitable quantity of moisture within the temperate regions. It is coming into vogue for the making of artificial coppices of this species of oak mixed with *Kunugi*, *Shite* and other trees.

The Pine family is represented by two species: *Akamatsu* or "Red pine" and *Kuromatsu* or "Black pine:"

Akamatsu, or "Red Pine" (Pinus densiflora, S. et. Z.):—The most widely distributed of all the coniferous trees in Japan being found from the southern extremity of Kyūshu to the southern portion of Hokkaidō; thrives in all soils except in places where more or less water always stagnates. Is fond of dry, well-drained land yellowish or reddish in color. It takes possession of deforested areas before other kinds of

forest-trees begin to grow. In the southern portion of Honshu it is found in excellent condition at the height of 2,000 metres above the sea. It demands light and hates shade. Forms splendid forests either by natural or artificial regeneration. Mostly found in pure woods; sometimes as mixed woods planted with the bamboo, *Konara* and other trees. Because of its hardy nature and speedy growth, communes, religious establishments and private persons are very fond of planting groves composed of these trees. In the southern and central portions of Honshu, where, in consequence of wanton felling, the soil has been greatly impoverished, the red pine will come to occupy vast areas in the near future. The wood, which is yellowish white with a shade of red, is hard, strong and elastic and contains a large percentage of resinous substances, which makes it proof against moisture; hence prized for use in engineering works and as mining props. Used for building purposes though not nearly equal to *Sugi* and *Hinoki* in this respect. As firewood ranks among the most indispensable kinds of wood used for that purpose. The "pine mushroom" (*Matsutake*), king of table mushrooms, grows in the "red pine" forests in the southern part of Honshu.

Kuromatsu, or "Black Pine" (Pinus thenbergii, Parl.):—Like "red pine" it serves various purposes. The wood, of reddish color, is strong and hard and contains a very large percentage of resinous substances. Being very durable is suited for bridge foundations and for use in general earthwork engineering. As firewood, it is valued as a great heat-producer! the root-wood being especially rich in resin is used as torches. Thrives well in sandy soils along the seashore. Found all along the coast of Shikoku, Kyūshu and Honshu; the area covered very extensive.

Besides those we have groves of bamboos in the sub-tropical regions. Bamboos take rank among useful timbers of Japan. The chief species of bamboos cultivated are *Madake*, *Hachiku* and *Mōsō*.

Madake (Phyllostachys bambusoides, Sieb. et Z.) and *Hachiku* (Phyllostachys puberula, (Miq.) Munro).—Have been used from ancient times for making various tools and utensils and for

building and ornamental purposes. Recently bamboo work began to be largely exported to Europe and the United States. Extensively cultivated by private persons in the southern part of Honshu, Shikoku and Kyūshu. The neighborhood of Kyoto and Nara abound in splendid bamboo groves. At Yamashina, Kyoto, there are groves producing *Madake* canes measuring 22 centimetres in diameter and 22 metres in length. Bamboo groves are mostly found planted either between plots under culture or on hill-sides. They are rarely of any considerable size. Bamboo planting is fitted for sylviculturists with small capital.

Mōsō (Phyllostachys nutis, Rivier):—The largest of the bamboo family; sometimes found of such dimensions as 30 centimetres in diameter and 25 metres in height. Planted in groves mostly in Kyūshu, Kii and the provinces adjacent to it. Valued for the manufacture of tools and utensils.

Temperate Forests.—The Temperate sylvan flora extend from the northern half of Honshu to the southern half of the Hokkaidō, between 36° and 43.° N. L., where the average annual temperatures range from 6° to 13° C. The Temperate forests rise in Formosa to the height of 3,500 metres: in Shikoku 1,800 metres; in Central Honshu a little lower, to wit, 1,500 metres; and in South Hokkaidō 500 metres.

These forests cover a large area and not a few of them maintain their primitive features. Being mostly natural woods of splendid trees they form the most important item of Japanese sylvan wealth. But as in these regions the climate gets rather cold and the snow lies on the ground during half the year, the trees are liable to be damaged by snow and require no small amount of tending and protection.

Timber Trees in Temperate Forests.—The number of the species of trees belonging to these regions is over 60 but the more important of them are *Hinoki, Sugi, Hiba, Koya-maki, Sawara, Nezuko, Momi, Tsuga, Ira-momi, Bara-momi, Himeko-matsu, Chōsen-matsu, Gayo-matsu* and *Kara-matsu* in the Coniferous class; and *Keyaki. Yachidamo, Katsura, Onara, Sawa-gurumi, Tochi, Kurami, Nire, Kuri, Kiwada, Harikiri, Enju, Hokoyanagi, Doro, Hōnoki, Kashiwa, Sakura, Buna* and *Kaede* in the Broad-Leafed class.

Hinoki, Fir (Chamaecyparis obtusa, S. et Z.) :—The timber is soft, close-grained, strong and tough and has a peculiar scent. Ranks first among Japanese timber trees, being used for building purposes, and as an ornamental wood and in engineering work and naval architecture; also in bridgework. Grows in the southern half of Honshu, Kyūshu and Shikoku. In the provinces of Kii, Yamato, Musashi, Tōtōmi, and Tajima, we find extensive forests of this tree. The natural *Hinoki* forest in Kiso is one of the three best forests in Japan. The natural forests in the Koya mountains in Kii are noted for producing big *Hinoki* tree. The home of this tree is in the central portion of Honshū, in regions from 550 to 1,400 metres above the sea level, but where the atmosphere contains a suitable proportion of moisture, it is found in well-formed woods, either pure or mixed, in both higher or lower districts.

Hiba (Thujopsis dolabrata, S. et. Z.) :—This tree together with *Hinoki*, *Sawara*, *Nezuko* and *Koyamaki* formed the so-called *Goboku* or "Five Trees" under the old régime and enjoyed careful protection at the hands of the feudal authorities. Mostly regenerated naturally; rarely planted. The Aomori districts in the north are noted for having pure woods of *Hiba*. The State forests in the Tsugaru and the Nambu peninsula are nearly pure woods of *Hiba* with a slight intermixture of *Buna*. There are extensive forests of *Hiba* mixed with other coniferous trees, such as *Himeko-matsu* and *Sawara*, in the mountains on the northern frontier of Rikuchū, in Goyosan in Rikuzen and in the mountains in the Tone districts, Kōzuke. The wood grows slowly and the year-rings are extremely narrow. The timber is compact and strong; therefore used for building and engineering purpose. It has lately come to be in great demand for use as railway sleepers, its durability being peerless.

Sugi (Cryptomeria japonica, Don.);—Very widely distributed, being second only to "Red pines" among the conifers in this respect. This tree wants light, grows well in soils having a suitable amount of moisture, is capable of speedy and considerable growth, some specimens being found of such huge dimensions as 2 metres in diameter and 40 metres high. In suitable soils

and atmosphere this tree forms woods throughout Shikoku, Kyūshu and Honshu and even in the southern provinces of Hokkaidō. Splendid specimens of natural pure woods of *Sugi* are found in the Nagakizawa State forests in Akita, while specimens of artificial forests are seen in the private forests in the Yoshino districts in the province of Yamato. The natural forests in Yakujima in Kyūshu are celebrated for producing timbers having very fine and pretty grains known as *Uzura-moku*, partridge grains. The wood is light yellow with a shade of red; used very much like *Hinoki* for building and ornamental purposes and in the manufacture of tools and utensils.

Sawara (Chamecyparis pisifera, S. et Z.): *Nezuko* (Thuya japonica, Maxim.): *Koya-Maki* (Sciadopytis verticillata, S. et Z.):—Naturally these trees are always found in mixed woods, and never as pure woods. In Kiso and in the Kōya mountains there are natural woods of these trees mixed with *Hinoki* and other coniferous species. They are also found in large groups in the provinces of Yamato, Bungo, Satsuma, Ōmi, Iwashiro, Shimotsuke and Uzen, 900 metres to 1,800 metres above the sea-level. The timber of *Sawara* and *Nezuko* is of pretty appearance, but being soft, light and easy to split is mostly used as boards and planks by joiners and carpenters. The *Kōya-maki* grows extremely slowly, its timber is close-grained and containing some resinous substances is very durable in water. It is therefore valued for making water-pails and for use in earthwork engineering.

Momi (Abias firma, S. et Z.):—Quite widely distributed, being always found in the primitive mountain forests in the southern provinces of Honshu, Kyūshu and Shikoku. Is a shade-bearing species. After its middle age it grows very fast and in well-adopted soil forms perfect trunk. The timber is light and coarse and undergoes much expansion and contraction, therefore inferior to the timber of other conifers. Owing to the length of its fibres and the possibility of cleaning them by bleaching, it is used almost exclusively as paper pulps. There being a great demand for the pulps the tree may gradually become extinct unless steps are taken for its artificial regenera-

tion. The boxes and cases exported to foreign countries from Japan are mostly made of this wood.

Tsuga (Tsuga sieboldii, Carr.) :—In distribution similar to *Momi* and mostly found in woods mixed with *Momi*. Growth very slow; the timber being of compact structure is highly appreciated for ornamental purpose. Used like *Momi* as material for paper and box making.

Himeko-matsu (Pinus parviflora, S. et Z.) :—Is found in woods in regions between places elevated 1,600 metres above the sea on the Kōtsuke-Echigo boundary-line and the mountain ranges of Iwashiro. Nearly pure woods are seen in the provinces of Toshima and Shiribeshi, Hokkaidō.

Goyō-matsu (Pinus pentaphylla, Mayr.) and *Chōsen-matsu* (Pinus Koreinsis, S. et Z.) are found overlapping the Temperate regions and the Arctic. Barely met with in the mountains in the central and northern sections of Honshu. The *Goyō-matsu* is found in the form of a quasi-pure forest in the province of Tokachi, Hokkaidō.

Bara-momi (Picea polita, Carr.) and *Ira-momi* (Picea bicolos, Mayr.) are very limited in distribution being only found to any great extent on the sides of Mount Fuji, at the height of over 2,000 metres above the sea-level. Generally they are found in solitary clusters on the high mountains. As they possess the useful characteristic of making reasonable growth even in poor and shaded land, they have drawn the attention of the Government authorities as being probably suited for making protection forests intended to preserve the soil. The growth is very slow and the timber being very soft, is inferior to that of other coniferous species for ordinary purposes but is suited for making ceilings and also water-free articles of furniture.

Kara-matsu (Larix leptolepis, Gord.).—Found in natural woods at Mts. Fuji and Asama and the Azumi districts in the province of Shinano. Grows wild in the mountains of Nikkō; nowhere elso found in natural woods. It is a decidedly light-demanding species and thrives in dry soils of volcanic origin. The timber is tolerably hard and durable and valued for house and ship-building purposes, as telegraph poles, in civil engine-

ering work and for other uses. The tree grows fast and is free from ordinary dangers incidental to sylviculture. Thrives well in any soil however poor, hence it is growing in popularity in Honshu and Hokkaidō.

The broad-leafed trees of the Temperate regions are very numerous and occupy more than one half the area under forest. They are found everywhere in great luxuriance, but single species are rarely seen in the form of a strictly pure forest, although *Konara*, *Kashiwa*, *Onara*, *Kaba*, *Koro-no-ki*, *Han-no-ki*, *Katsura* and *Buna* are widely distributed throughout Honshu and in the southern half of Hokkaidō in almost unmixed woods. All the other species grow in irregular intermixture with other broad-leafed or needle-leafed trees, sheltering and protecting each other so as to preserve the original sylvan features. Below are given chief species of sylvicultural importance:

Keyaki (Zelkowa Keaki, Sieb.).—No other broad-leafed species is adopted to so many ways of utilization and so highly valued as *Keyaki*. This species is found everywhere in Honshu, Shikoku and Kyūshu, but rarely in pure woods. It grows to enormous dimensions in woods intermixed with shade-bearing species of the broad-leafed family. Loves calcareous soils and the south-eastern sides of mountains, where, when the soil is suitable, it attains perfect growth. Found wild below 1,600 metres in Shikoku and Kyūshu and under 750 metres in the northern section of Honshu. Kiso, Izu, Tōtōmi, Kii, Hyuga, Yamato, Ise and Ōu (the north-eastern districts of the Main Island) are especiall noted for producing big *Keyaki* trees. Requiring a great many years for its full growth, it is unsuited for planting by private sylviculturists with small capital. The Government is, however, making their best endeavors to preserve and increase the areas under this species. The timber is very strong, hard, and lustrous; highly valued for building and ornamental purpose; also in naval architecture. *Keyaki* timber which has *Jorin* (ring-like), *Uzura*, (partridge feather), *Tama* (gem) or *Botan* (peony) grain is used for making valuable articles of furniture. *Keyaki* wood is a favorite material for sculptors, being hard and easy to work.

Buna (Fagus sylvatica, var. Sieb., Maxim.)—Occupies the largest space next to *Akamatsu*. Found in the hills and mountains in the northern section of Honshu, in the elevated districts in the southern section of Honshu, Shikoku and Kyūshu; also in many provinces of Hokkaidō. Mostly found mixed with *Onara*, *Katsura*, *Shioji*, *Itaya-Kayede* and other trees, but in Aomori, Iwate, Echigo and Yamagata pure woods of vast dimensions are seen in the mountains over 300 metres above the sea. As a firewood and charcoal producer, this is one of the most important speces. The timber is little used for building purposes. The Kosaka, Ani and other mines have large *Buna* forests for getting supplies of fuel. This tree grows well in the shade and having the characteristic of growing even when extremely old, it sometimes attains an enormous size. The Ainos in Old Japan are said to have made log-boats of this tree.

Yachidamo (Fraxinus mandshurica, Rupr.) and *Katsura* (Cercidiphyllum japonicum, S. et Z.,).—The only broad-leafed species affording building timbers. Also used for ornamental purposes. Very widely distributed, found in all parts of Hokkaidō and in the mountain valleys in the northern section of Honshu. Thrives best in level ground; excellent pure woods of *Katsura* are seen in the province of Iburi. The timber is soft and compact and possesses elastic powers of a durable character. Hence extensively used of late as railway sleepers; it is chiefly such sleepers that are exported to North China.

Inu-Enju (Cladorostis amurensis, var. floribunda, Maxim.):—Found in the northern section of Honshu and in South Hokkaidō mixed with other broad-leafed species. The timber is very pretty and is used for making valuable articles of furniture. Exported to China and Korea as railway sleepers.

Kurumi (Juglans sieboldiana, Maxim.):—Grows in rich mountain valleys and on low lands in the central and northern sections of Honshu. On the plains of Ishikari and Tokachi in Hokkaidō, it is found in woods mixed with *Yachidamo*, *Katsura*, *Nire* and other trees. The timber is in demand for making railway carriages and for highly ornamental purposes, and also for rifle-stocks.

Harikiri (Acanthopanox ricinifolium, S. et Z.):—Grows in wet soils in Shimozuke, Iwashiro and Iwate; and everywhere in Hokkaidō. In rich soil attains considerable dimensions. The timber is somewhat hard and lustrous with well defined grain and whitish in color. Prized for ornamental purposes and for making articles of household furniture. In great demand as railways sleepers like *Yachidamo* and *Katsura*.

Kashiwa (Quercus dentata, Thumb.) and *Onara* (Quercus crispula, Bl.):—Found in wet places between the mountains in the Nasu and Ōu districts in Honshu and everywhere on the plains of Hokkaido. In Honshu rarely found in pure woods, always growing mixed with other broad-leaf species, but in some parts of Hokkaidō, there are extensive pure woods of these trees. The timber of *Onara* is widely used as sleepers and is one of best producers of firewood and charcoal. *Kashiwa* contains tannin in its bark and is used in curing skins. Otherwise it is not used, except as firewood.

Hoko-yanagi (Populus tremulus, var. villosa, Mesm.) and "*Doronoki*" (Populus balsamifera, var. suareobenus, Send):—The two species are most valuable wood in Japan for making match-sticks. The former grows all over Shikoku, Kyūshu, Honshu, and as far north as Hokkaidō, while the latter thrives well in the north-eastern districts of Honshu and Hokkaidō. They grow easily in sandy wet soil, are found forming uniform forests of perfect sylvicultural aspect in many parts of Hokkaido. The trees are fond of light and under favorable condition their growth is very rapid, and after 25 years from germination they easily attain the height of 6 metres. Reproduced by seeds or layer or by dividing the roots. They are being planted extensively in private forests.

Kuri (Castenea vulgaris, var. Japonica, D.C.):—The extent of the growth of this species is exceedingly wide. In Kyūshu and Shikoku and the western parts of Honshu the tree imparts a special aspect to the forests growing on the sides of high hills or on hillocks. In places north to the middle section of Honshū, it grows well on the plains and produces valuable timber. However the specie rarely forms any extensive pure

forest of its own, and generally mixed *Buna, Hiba, Kiwada, Katsura, Kayede Sawakurumi*, etc. In the Kobinata State forest found in Tone district, Kōzuke, and in Hiraga district, Ugo, it is found forming pure forests of no small extent. The timber is extremely hard, can stand wet, and on the whole lasts long, is therefore preferred for railway sleepers to any other tree growing in Japan. The sleepers used in the Government Tōkaidō railroad and in the Hankaku railroad are made from the timber of this tree.

Sakura (Prunus Pseudo cerasus, var. spontanea, Maxim), *Kaede* (Acer palmatus, Thumb), *Honoki* (Magnolia hypolenea, S. et Z.):—These are not trees of any great sylvicultural importance, and very rarely do they form pure forests of their own, growing mostly, as they do, amidst conifers or broad-leaf trees. However they are of importance for certain special purpose, and as the supply is hardly sufficient to meet demand, their price is comparatively high. In view of this fact, both in State forests and private forests, they are being planted side by side with trees of other sorts.

Tochi (Æsculus trebunata, Bl.), *Nire* (Uluno campestris, var. Learis, Planch), *Hannoki* (Alnus Japonica, S. et Z.), *Toneriko* (Fraxinus Bungeana, D.C.), *Saikachi-enoki* (Gleditechia Japonica, Miq.), *Yanagi* (Salix acutiporia, L.) are deciduous broad-leafed trees not particularly possessing any great sylvicultural value. They are grown in this zone for the purpose of giving protection to primary trees or for maintaining the fertility of forest-land.

Frigid Forests.—Forests in the Frigid zone occupy in the northern half of Hokkaidō and the Kuriles those places where the average yearly temperature does not exceed 6°. In regard to altitude distribution, the zone comprises in Formosa those places that are not less than 3,500 metres from the sea-level, and in the middle section of Honshu all places 1,800 metres above sea level.

Timber-trees in Frigid Forests.—Timber-trees growing in this region are naturally not so numerous as in those in warmer regions. Indeed as the forests of this zone, except those in Hokkaidō, are located in high altitudes, with poor soil, and subjected to strong

winds, the trees are generally too stunted in growth to be of any value.

In Hokkaidō, however, conifers grow luxuriantly and many primitive forests not yet explored are found. The principal trees in these forests are *Todo-matsu* (Abies Sachaliensis, Mast.) and *Yezo-matsu* (Picea ajanensis, S. et Z.). Starting from altitudes measuring 450 metres in the southern parts of the island, these trees are found growing luxuriantly in the mountains of Ishikari, Teshio, Tokachi, Nemuro, and Kitami, and lastly in the island of Kunajiri. The Imperial forests at Tarunai, Uryu, Kushiro, and the State forests at Otoneton, Shari and Kunajiri practically consist of extensive pure forests of these trees, presenting a highly regular aspect. The timber of *Todo-matsu* is in large demand for architectural and earth-works, and is indeed most valuable of all the timbers produced in Hokkaidō. The wood is, however, coarse-grained, and light and is liable to bend when exposed alternately to dryness and humidity. Rather close-grained and resinous, the wood is in great demand for architectural work.

Akaezo-matsu (Picea Glehui, Mast.).—Though valuable as timber next to the two foregoing species, this tree rarely forms a pure forest, is in greater demand than the other two, and commands a higher price. The wood is close-grained and suited for architectural work.

In Etrup and Shikotan of the Kuriles, a species of larch, scientically termed Larix daburica, var. Japonica, Max. is found growing, and exposed to inclement climate forms a pure forest of good aspect. The wood is reddish, hard, and well stands wet, and is therefore used in shipbuilding, earthwork and furniture-making.

Shira-kaba (Betula alba, var. vulgaris, D.C.), *Yama-hannoki* (Alnus incana, var. glanea, Ait.), *Nagakamado* (Pirus ancuparia, var. Japonica, Max.) are some of the deciduous broad-leafed trees that are found in this zone either as pure forests or scattered among other trees. They are, however, of small sylvicultural value, and are generally used as firewood by miners or fishermen residing in the vicinity.

There are many other trees growing in the respective zones, but the principal species are generally confined to those above described. As found in natural growth, they either form pure forests or are mixed with other trees. In general conifers occupy in the southern districts elevated places, while forests on the level mostly consist of broad-leafed trees. In the northern districts conifers cover mountain slopes, while on their top and foot broad-leafed trees predominate.

Ratio of different kinds of Wooded-areas.—On the whole the different classes of forests exist in the following proportions in the wooded areas of Japan :—

Conifer Forests	21%
Broad-Leafed Forests..	25%
Conifer and Broad-Leafed Forests	45%
Thinly-Stocked or Blank Areas, etc	9%
Total	100

Bamboo areas, though forming a feature in our forest system and sufficiently profitable in exploitation, are still extremely limited in extent; nor do they show any sign of enlargement in a near future. A description of them has, therefore, been omitted here.

The growing extension of *Aka-matsu* forests recently in Honshu, Shikoku and Kyūshu tended to raise the relative ratio of conifer forests to broad-leafed forests, and this tendency is further accelerated by the greater demand, in consequence of the development of industry and business, for such conifers as *Sugi*, *Hinoki*, and *Karamatsu* which are being planted extensively. In the State forests the relative proportion of the different kinds of forests stands as follows :—

Conifer Forests	11%
Broad-Leafed Forests..	28%
Conifer and Broad-Leafed Forests	49%
Thinly-Stocked or Blank Areas, etc	12%
Total	100

The forest-areas devoted to conifers will attain before long the proper ratio to which they are entitled from increasing demand upon them.

In the Imperial forests, owing to the greater attention paid to forest aspect, the relative proportion is more satisfactory, as :—

Conifer Forests	23%
Broad-Leafed Forests..	24%
Conifer and Broad-Leafed Forests	49%
Thinly-Stocked or Blank Areas, etc..	4%
Total	100

Both in the State forests or Imperial forests the principal trees are, in conifers, *Aka-matsu*, *Tsuga*, *Todo-matsu*, *Sugi*, *Hinoki*, *Momi*, etc. ; while, in broad-leafed trees *Buna*, different varieties of *Nara* and *Kashi*, *Kaba*, *Kuri*, etc. constitute principal species.

III. ADJUSTMENT OF THE FORESTS.

General Remarks.—The work of forest adjustment was attended to by the Court as early as the Konin era (the beginning of the 9th century), when the Emperor of the day issued a proclamation restricting the undue felling of trees and ordering in general the due protection of forests. From about that time till the advent of the Tokugawa Regency, the sylvicultural business fared no better than other industrial affairs, that is, it suffered much from neglect and devastation. With the establishment of the Tokugawa régime, and after about three centuries of this iron administration something like a regular system for protection of forests had been evolved. Different systems prevailed, indeed, in different daimyiates but they all had this feature in common, that is to say they originated from necessity of military defense. Stern rules characteristic of a military despotism were therefore enforced for the protection of the forests. It is true that even then forests were divided into utilization forests and protection forests, but even in the case of the former more or less severe restrictions were always enforced. The existence of protection forests was extraordinary both in kind and extent. These comprised forests at the headwaters of rivers, the forests planted to prevent landslips, the forests planted to protect against damage from heavy snowfalls, the forests intended to give shelter to the

water and to invite the collection of fish in it, and forests of other descriptions. For the protection of special kinds of trees the rules enforced were extremely strict. The prohibition trees differed according to places. *Hiba* tree was protected in Aomori,

"Prohibition Trees."

Sugi in Akita, while Kiso had "five prohibition trees" Kii "six," Awa "seven" and Kumamoto "three." This prohibitive treatment gave rise to the development of the work of utilization and adjustment, and by keeping careful forest records and by adopting a conscientious system of rotation each daimyiate made it a point to secure the constant supply of valuable kinds of timber within its own borders. Whatever advantages Japan now enjoys in the matter of forests, she must be said to owe to this jealous guard kept over her forests of old by the feudal pinces.

The protection of the forests having been maintained by despotic rules as was the case in France before the Revolution,—rules which did not originate in any regular economic principles,

The Restoration and Deforestation.

the withdrawal of those rules on the Restoration was the consequence. The Meiji Government lost no time, however, in taking measures calculated to check this alarming state of affairs. Those measures were, however, not quite calculated to cope with the trouble, and at best could but partially remove it. One of the most serious inconveniences that confronted the Forest authorities was the absence of definite boundaries between one State forest and another or between a State forest and a private forest, so that while in the former case the accurate determination of forest areas was not possible, in the latter case the State frequently claimed forests belonging to the other owners. Again illicit felling or felling due to mistake frequently took place, thereby complicating indescribably the work of proper control. It was primarily with the object of removing this fruitful source of trouble and of thoroughly adjusting the boundaries, that the authorities started in 1890 the first regular programme of treatment.

First Adjustment Programme.—This programme is to be completed in 15 years ending 1904. To meet the expense necessary for carrying it out the Government decided to disburse, besides

regular expense, a sum of 855,851 *yen* on account of extraordinary expense. The programme aims in accomplishing the following object:—

1. To inquire into the condition of those State forests and plains (measuring altogether 6,600,000 *cho*) irregularly scattered over the country, to carefully classify them into those that should with benefit be maintained as State property and those that should be transferred to private property; also to clearly define the jurisdiction limit of supervising offices by determining the relative convenience of control and relative economic advantages.
2. To clearly define the boundary between State forests and to provide against illicit felling and felling by mistake.
3. To ascertain the exact area of those State forests of greatest economic importance measuring 1,380,000 *cho* and to prepare accurate forest maps.

From its very nature the work embodied in the foregoing clauses requires a long space of time, but at the same time the elaboration of a definite sylvicultural system demands the speedy completion of the work. It was a very judicious measure, therefore, on the part of the authorities that the programme was adopted as a continuation work so as to preclude it from being altered by any new arrangement that might be made in future.

The working of this programme, which is to be completed this fiscal year, has been highly satisfactory and has imparted for the first time a firm basis of operation to Government forestry policy. The sale of State forests and plains, the opening up of some of them to exploitation by private individuals either by being brought under cultivation or converted into pastures, the elaboration of a high rotation system for other kinds of forest-land—all these and many other things are the fruit of this work of the first programme, which may therefore be said to have inaugurated a new era in the economy of State forests in this country.

Second Adjustment Programme.—The work started by that programme has been continued by the so-called second programme which came into operation in 1898 to extend till 1903, a Special Forest Account Fund being created for the purpose. The work aimed at in this new programme is one of the highest importance,

being nothing less than the adjustment of the irregular condition of State forests, the expansion of the limit of exploitation, the increase of fertility of forest-land, in short the thorough re-adjustment from the very basis of the economic system of State forests. Started in a concreate form the work involved in this programme consists in determining the forests and plains that may no longer be kept as State property, in the final survey of State forests and plains which should be kept as such, and in the elaboration of plan for working such forests and plains, planting open spaces, undertaking engineering works relating to forests, purchasing such forests as are required, and in short all those matters necessary for determining the system of exploiting State forests and plains. The fund devoted for completing this programme was fixed at 23,025,053 *yen*. The fact that the programme involved such a big outlay at first deterred the authorities from adopting it, but the difficulty was solved by setting it apart as a special account with the revenue supplied by the proceeds of the sale of forests and plains which may no longer be kept as State property. The measure embodying this programme obtained the approval of the Imperial Diet and was finally issued as law in 1898.

The completion of this important programme mainly depending on the sale of unimportant State forests and plains, it is evident that the authorities must carefully regulate this sale so that all the different undertakings in the programme may be regularly carried out according to the prescribed plan of operation.

Financial Prospect of the Adjustment.—The result of the programme will revolutionize the economy of the State forests. Not to speak of an addition of 50,983 *yen* to the Revenue on account of the Land Tax accruing from the forests and plains transferred to private ownership, the adjustment effected will considerably diminish the managing expenses and will improve the efficiency of the work of control. The revenue from the increased felling is especially important, it being estimated that after 1910 the revenue will be four times what it is now. This means an addition of over 3,310,000 *yen* to the State Revenue. After the lapse of one hundred years, by which time the renovated forests, even supposing that the market price will remain as low as it in

now, will have grown to 66 million *yen* a year, about a quarter of the total amount of Revenue to-day. That this forecast is by no means a sanguine one is proved by the experience of the four years that have elapsed since the commencement of the programme.

Investigation and adjustment of State Forests.—The investigation was carried out from 1890 to 1894 into the existing condition of State forests in Shikoku, Kyūshu and Honshu where there are 719,473 such forests, with the object of selecting those forests which should be kept as State property and those which may with advantage be sold to private individuals.

Mode of First Adjustment plan.—The selection is made by keeping the following points in view:—

1. Those which exist in a lot of over 50 *cho* or in different lots found within the limit of one town or village or within the distance of not more than 2 *ri* from each other, and which can permanently carry out independent sylvicultural work.
2. Those which exist in a lot of less than 50 *cho* but which can without any trouble be managed in consequence of the existence in the same district or in a neighboring district of a State forest or forests measuring over thousands or hundreds of *cho*.
3. Those which, though existing in a lot of less than 10 *cho* or are economically unimportant, are useful for constructing forest-roads, for the transport of wood or for storing wood, building official residences of foresters or for other matters connected with State forests.

The forests coming under any of the foregoing conditions were to be reserved as State property, and the others not satisfying them to be disposed of. Also forests or plains necessary to the farmers living in the neighborhood for getting fodder or grass for manure were to be transferred to private ownership, provided no particular necessity existed for keeping them as State property.

The result of investigation was that of the State forests and plains measuring altogether 8,095,916 *cho*, 7,354,343 *cho* were judged fit to be retained as State property and the remaining 741,573 *cho* unfit for that purpose.

The proceeds obtained by disposing of those unimportant forests and plains are to be used as funds for carrying out the second forestry programme, mentioned above, that is to say, the forest exploitation as work of special account.

SECOND ADJUSTMENT PLAN.—However the selection made was afterward judged to be not entirely satisfactory; it was found in fact to be satisfactory both in respect of omission and of commission, while with the progress of the times, it became necessary to take into a greater considerations than before the question of the public peace and order. It was decided in 1899 to make thorough second investigations based on advanced principles of forest exploitation. The rules to guide the investigation were drawn up and the work was started afresh in that year. The disposal of unimportant forests and plains determined by the second investigation is to be completed in six years from 1899, and during the three years from that year to 1901 inclusive about 51,756 *cho* in 16,113 lots were sold, and a sum of 5,199,198 *yen* was realized by that transaction.

DEMARKATION OF BOUNDARIES AND MEASUREMENT OF STATE FORESTS AND PLAINS.—The exact measurement of forests and accurate forest-maps being absolutely indispensable for conducting scientiffic treatment of forests, the Government issued in 1884 Notes relating to Boundaries of State forests, aud caused the local offices to undertake the demarkation of the boundaries and the measurements of the forests. The formulæ set forth in the Notes were too simple to render the result of the work to be of any great use. They were repeatedly improved, the last in 1899, and the system elaborated in the latter year is now in force.

THE SYSTEM NOW IN FORCE.—That system divides the work into three divisions, viz., demarkation of boundaries, triangular surveying as applied to forests, and contour surveying. On the completion of the work, foundation maps of working plan are to be drawn on a scale of 1/5000.

The final survey carried out according to the foregoing system reached in extent to 29,289 kilometres and 761,349 *cho* 3 *tan* 5.22 *se* in measurement. There remain 2,850 kilometres for which the work of contour surveying has been accomplished but whose measurement still remains to be completed.

Elaboration of the Working Plan.—The treatment of forests without any definite plan being inconsistent with the interests of forest economy in 1890 a provisional working plan was therefore drawn up intended to provide some directions with regard to felling. But with the progress of the first adjustment programme it was possible to apply a more scientific and permanent plan, at least in the case of these forests for which the work of adjustment had been completed. The forests qualified to be dealt with under this permanent plan were those in Ehime, Fukuoka, Kagoshima, Hiroshima, Ōsaka, Ishikawa, Akita, and a few others. The notes drawn up for forming the plan were to this effect:—

1. That the system of sylviculture should be maintained in as perfect a condition as possible and that the utmost quantity of timber possible should at the same time be obtained.
2. That a proper care should be exercised in planting and felling, and provisions should be made against damage of wind and fire and insects.
3. That reserves should be provided to counteract the diminution of the crop incidental to such damage.

In the elaboration of the plan a minor forestry office was regarded as a unit of economy, and the determination of a yearly cutting volume was based on the area to be cleared and the crop to be obtained. With the progress of the work of adjustment and the greater light bestowed, in consequence, on the condition of the forests, it was possible, especially as a result of the development of facilities of communication, to draw up a plan of a more perfect description. In 1899 and again in 1901 the necessary amendment was effected in the principle of the working plan. The amendment was chiefly intended to adopt the plan as well as possible to the conditions of a district and of a forest. It was also decided that the improvement of the irregular aspect of the forests should be made in a limited space of time. In short, the plan was made to cover all matters relating to the utilization of timber and the renovation and regeneration of forests, and was intended to procure the maximum income and produce crops best calculated to satisfy the demand on the market.

The permanent working plan as at first elaborated was first put into operation in 1893 and 58,916 *cho* 5 *tan* 9 *se* was adjusted till 1899, while from the time of the carrying in effect of the second adjustment programme to the end of 1901 the forests measuring 30,945 *cho* 7½ *tan* received similar treatment, making altogether 89,862 *cho* 3½ *tan*.

Adjustment of the Imperial Forests. — The Imperial forests having been originally transferred from State forests, the conditions requiring adjustment and the elaboration of working plan were practically identical with those of the State forests. As in the case of State forests, therefore, the work of selecting those forests to be retained and those to be disposed of was started in 1892 and completed in 1898 while work of drawing up permanent working plan was commenced in the latter year. The final survey was carried during the nine years ended 1901 for forests extending in aggregate length to 7,076 kilometres and measuring altogether 332,482 *cho* 2.21 *se*. The working plan for 147,205 *cho* in the forests at Fuji, Kiso, Amaki, and Watarae has been completed.

IV. EXPLOITATION AND TREATMENT OF THE FORESTS.

Sylvicultural Treatment and Ownership.—The working plan and economy of forests differ according as they are owned by private individuals, by the State or by the Imperial Household, for it is naturally expected that, in the forests belonging to the State or to the Imperial Household, the interests of the public and of the nation should be consulted more than in private forests. Consequently the managers of the State forests do not look for speedy returns. In view of this consideration the State and Household forests have elaborated a high forest system and the felling of trees is regulated according to this special system.

Forests also present a different appearance according as they belong to the State, to the Imperial Household or to private individuals. Those belonging to the former two are generally re-

newed as a result of natural growth and are therefore less uniform in composition than those owned by people whose forests receive greater care, the object being to make them yield returns more quickly. The woods at Tōkaidō, already mentioned and those at Muro and Kii, are noteworthy in this respect, the profit derived from them being even larger than the rate in Saxony, where forestry is carried on to greater perfection than anywhere else throughout the world. On the other hand, affected by this consideration of obtaining quicker returns, privately owned forests do not generally admit of high forest treatment. The State or Household forests are therefore obliged to supply that in which the other forests are deficient and to produce timber-trees and to properly regulate the cutting period. This period is generally as follows for valuable timber-trees:—

Rotation in State and Imperial Forests.

	years.
Sugi	80—120
Hinoki	100—150
Hiba	100—150
Aka-matsu	40—100
Kara-matsu	80—100
Kuro-matsu	80—100
Keyaki	150—200
Kusu	150—200

Rotation in Private Forests.

As the economy of ordinary forests does not admit of such high rotation, some of them adopt the medium rotation system, such as coppice-with-standard systems, and while utilizing the underwood in a comparatively short space of time they leave the over-wood for utilization after it has reached the period of proper maturity. Sometimes the two-storied high forest system is adopted, and by planting light-demanding trees of quicker growth double rotation system is applied.

Forest Formations.—In regard to the selection of forestry formations, considerable care is required, for while naturally regenerated forests require reorganization on account of their irregular aspect a pure forest formation is likely to cause trouble in Japan

from wind or snow and also on account of the risks from injurious insects. The result is that the planting, as it is carried on now-a-days, aims at growing two or three different species made to occupy different compartments or groups or suitably mixed together. Then again the sylvicultural system as adopted in State forests necessarily differs from that in privately-owned forests, and varies also according to locality. For instance, on mountain slopes clear cutting methods, especially of any wide area, may be inadvisable and selection cutting and shelter-wood system have to be adopted. This selection cutting being, however, inconvenient, the Government is determined to adopt, as far as circumstances permit, the clear cutting method and to entirely renovate sylvicultural formation.

The coppice-with-standard system is adopted for a special sort of forestry management, especially for small fire-wood areas worked by private individuals who are aiming at the largest possible returns at within shortest possible periods. This system is of course out of place for a forest of any extensive area.

Bamboo plantations constitute peculiar feature of our sylviculture, and is likely to prove highly profitable owing to the growing demand for bamboos. One serious drawback in the management of bamboo groves is the fact that land suited for raising any large bamboo forest is not to be found in Japan, while the more valuable varieties of this species can only be grown in certain limited parts of the country.

Coppice woods are grown to supply firewood, the demand for which is unusually large in Japan. They are generally left to renew themselves, especially when the area is extensive; but those situated in the vicinity of cities and towns are artificially tended, the species chosen for this purpose being generally *Kunugi* and *Konara*.

Selection Cutting in Protection Forests.

The treatment of protection forest consists of selection cutting, the style of which must differ according to the character of the forest and to local conditions. The rotation should be regulated according to the following standards:—

Copice Woods	Not less than 10 years.
Bamboo Woods	Not less than 3 years.
Coppice-with-Standards	Overwood not less than 30 years, underwood not less than 10 years.
Timber Forests	Not less than 30 years.

Treatment of State Forests.—The total area of the forests under regular treatment is being ascertained at present by the Government. At present the data for State forests alone are available, these roughly standing as follows:—

Method of treatment.	per cent.
Clear Cutting Timber-Forests	32
Shelter-Wood Timber-Forests	6
Selection Cutting Timber-Forests	24
Coppice	17
Coppice-with-Standard and Bamboo	10
Thinly Stocked Areas, Bare Areas, etc.	11
Total	100

It will be seen from the above that the timber-forests treatment occupies about 62 per cent. of the whole areas of State forests. The principal growing stock consists of *Buna* (beech) 30 per cent., *Akamatsu* 20 per cent., *Sugi* 12 per cent., *Hinoki* 7 per cent., *Kashi* (oaks) 6 per cent., *Kuromatsu* and *Hiba*, both 4 per cent., the remaining 17 per cent., cansisting of conifers and broad-leafed trees. In coppice woods *Kunugi*, *Konara*, and oaks occupy about 85 per cent. while in coppice-in-standard woods *Momi*, *Tsuga*, oak and *Nara* predominate over any other species.

Conversion of Wood.—The method of conversion of wood have become more and more uniform than ever. There are usually three methods, these being the outcome of customs at different forest districts and in different markets.

Styles of Conversion.—The Fukagawa timber yard in Tokyo is the most important depot for the wood produced at the northern parts of Middle Honshu. Three different styles of designation are in vogue in this depot corresponding to so many modes of convertion. These are "Motoki," "Nami-motoki" and "Kawabe-mono." The first comes from the wood districts of Mino, Hida, Owari, Tōtōmi,

Tosa, Mikawa, etc., with a standard length of not less than 14 *shaku*, the second is applied to woods coming from Kii and measures not less than 14 *shaku*, and the last one is applied to woods produced at Hitachi, Shimozuke, and Musashi with the length of 14 *shaku*. Woods coming from Hokkaidō and the north-eastern parts of Honshu are treated as "Motoki" and therefore possess measure of corresponding length. All these kinds of timber are prepared either as round logs or balks or sawn timbers. The converted timbers of "Motoki" are required to possess the legal standard, but for those of the other two kinds the allowance of 2 to 3 per cent. to the standard measure is conceded.

In general *Sugi, Hinoki, Matsu, Keyaki, Momi, Tsuga, Hiba, Yachidamo, Hōnoki, Katsura*, etc., are converted as sided logs, while *Sugi, Hinoki, Sawara, Tōchi*, etc., appear on the market as round logs.

Season of Felling.—The season of felling depends of course upon the local conditions, the convenience of transport, etc. but in general the five months beginning with the autumnal equinox and ending with the succeeding February are regarded as the felling season. In such snowy regions as Hokkaidō and the north-eastern districts of Honshu where the means of transport are imperfect, felling must be started in the beginning of the snowy season, so that the timber may be easily carried over the snow. In places where the supply of timber for industrial purposes or firewood is to be kept up all the year round there are arrangements for the uninterrupted felling of the trees.

Transport of Converted Wood.—The transport of converted timber may be divided into two stages, the first being the transport of woods from felling places to depots and the second the transport of the timber from the depots to the markets. In the first stage, chiefly owing to the hilly condition of the forest area in Japan and also to the presence in its proximity of rivers and streams, water ways have been utilized from early times for the conveyance of timber. Indeed economic considerations do not yet allow in most cases the construction of special forest roads. Transport of timber along the middle and lower courses of rivers is generally, as in Bangkok and Rangoon, in the shape of rafts, till the timber reaches depots usually

situated at the mouths of the rivers and therefore easily accessible from the sea.

The facilities supplied by rivers are attended in Japan by a drawback usually unknown in other countries, and that is by the necessity of suspending the river transport during the season of the planting and growth of the rice-plant, when the water of rivers is extensively utilized for the purpose of irrigating the rice-fields. Then there is another drawnback in this system, for the distance between the source and mouth of our rivers being comparatively short they are liable to become suddenly overflown in time of heavy rain. Therefore the river transport of timbers is generally done during the seven months elapsing between the season of the autumnal equinox and that of the spring equinox.

However in consequence of the recent increasing demand for timber and also owing to the extraordinary improvement in the means of communications, coupled with the consideration that river-transport, besides being attended by the drawnbacks before mentioned, is liable to injure the quality of the timber, the tendency has gradually set in of making arrangements for land-transport and of constructing forest roads leading either to railroads or high roads. These arrangements are being made in State forests, and the result has proved economically profitable.

Minor Forest Produce.—The tendency to a luxuriant undergrowth in Japanese forests, principally due to abundance of moisture, gives the minor produce business a peculiar aspect, for the removal of the undergrowth is of course necessary for the sake of the forest as for that of the undergrowth if the latter is to be utilized as a minor produce.

Litters.—In forests belonging to the State or in those kept in its custody the people living in the vicinity are generally allowed, under certain conditions, to collect gratis dead branches and leaves to be used as fuel.

Grasses and Herbage.—Though not so extensive as formerly, the custom still prevails among our people of regarding forests and woodlands as places for getting fuel and fertilizers in the shape of grasses and herbage, so that even at present there is no small number of woodlands containing no growing stock and principally

used by the people for procuring manure grasses and herbage from. It is in those grass-lands that the injurious practice of burning is still carried on, especially in southern districts where farming is more extensively carried on than in the northern and less inhabited districts. The practice alluded to prevails to a larger degree than elsewhere in woods growing on a soil of a granite or Tertiary formations. However as it has been strictly forbidden by law, this injurious custom may entirely disappear in the near future.

Mushrooms.—Mushrooms are the most valuable minor forest produce in Japan, there being over ten principal edible fungii growing to a greater or less extent throughout the country. Of these the *Shiitake* is the most important, and constitutes one of the staple export items, its export to China, Hawaii, Hongkong, India, etc., having reached to 860,671 *yen* in value in 1901. The mushroom is produced in larger quantities than elsewhere in Hyūga, Bungo, Kii. Ise, etc., where such species of wood as *Kunugi, Konara, Soro, Shide,* etc., which the mushroom prefers to grow on in preference to other trees abounding in the forests. Sometimes forests are prepared in those districts with the main object of producing the mushroom, and indeed this practice is often found more profitable than the ordinary wood-growing industry. In a forest intended for the growth of mushrooms a system of rotation of from 18 to 25 years is carried on and the forest is therefore managed according to the coppice system. The mushroom, moreover, possesses this special advantage, of growing both in spring and autumn, and naturally there are two varieties, one being more fragrant than the other.

Matsutake (Armilaria edoides, Berk) grows in forests of *Akamatsu,* especially those growing on soil of the Tertiary and granite formations found in the southern districts. What is interesting about this edible fungus is that it grows most when a pine forest has be come worn out by excessive utilization of its produce. Consequently with the improved forest management that was recently introduced, the output of the fungus has shown a tendency to diminish. This fungus is perhaps more popular than the preceding variety as a culinary dainty. The only defect about it is its delicate texture, and the consequent difficulty of keeping it dry, as can be done satisfactorily with the "Shii" mushroom. Consequently the season of

the "Pine-mushroom" last only about a month in the autumn. The business of tinning the fungus has lately been started, and as the tinned samples are reported to have been favorably received in foreign markets, this mushroom may by proper treatment become a valuable export item like the other variety. It may be added that in the State forests in charge of the Ōsaka and Okayama Major Forest Offices the greater portion of the forest revenues is at present derived from the sale of "Pine-mushrooms" growing in them.

SEEDS, ACORNS, ETC.—Seeds constitute another important minor forest produce. They are collected for various purposes. The seeds of trees of the Rhus species are principally used for making wood-wax, which is very much in demand both at home and abroad. In 1901 the export reached 610,000 *yen* worth approximately. It was formerly used for making candles, but at present it is also used for giving lustre to woven goods, lubricating metallic ware to prevent rust, while in Europe it serves the purpose of sealingwax. The trees are grown in the premises of shrines and temples, in public forests owned by private individuals. They grow best in sunny slopes.

The business of collecting seeds to produce seedlings is also a profitable piece of minor work, especially since the work of tree-planting both by the Government and private people has become active. There are at present not a small number of merchants dealing in this special line of seeds. The seeds that are in larger demand than others are those of *Sugi*, followed by those of *Akamatsu*, *Hinoki*, *Kunugi* and *Karamatsu*. The seeds of the *Sugi* and *Hinoki* are produced most at Yoshino, in Yamato, and Muro, in Kii, where a machine of improved style is used for drying the seeds. The seeds of *Kunugi* come from Ikeda, in Settsu, and Nasu, in Shimotsuke, those of *Karamatsu* from Saku district, Shinano, and the seeds of *Aka-matsu* from many places in Kyūshu, Shikoku, and other warm districts.

Further, some acorns and nuts are useful for procuring oils, the seeds collected for the purpose being those of the beech, camelia, *Shikimi*, *Abura-giri*, *Inu-gaya*, walnut, etc. The demand for those oils having been extensive lately owing to great development in the use of machinery, these seed-collectors can often

earn as much as threefold of the daily wages derived from other kinds of work.

Barks.—The barks of oak trees are valuable for dyeing and tanning, and the oak forests in northern Honshu and Hokkaido produce an abundance of these barks. All those forests are the result of natural growth and have not been artificially stocked with the object of producing the barks. The barks of alders, chestnuts, *Tsuga*, *Nara*, etc. are also used for tanning and dyeing.

Stones.—Except in forests where the removal of stones is inadmissible for important reasons, the utilization of forest-stones is extensively carried on, the demand for stones for various public works having become unusually great recently. Of these stones, granites and andesites are most valuable among igneous rocks. The former come most from the districts bordering on the Inland Sea and the islands situated in it, as also from Mino, Owari, and Mount Tsukuba. Tufa-rocks found in Hakone and Izu, slate-stones in Rikuzen and Kōluke, calcareous stones in Mino are also valuable for building and other purposes. Marble-stones are produced at Kuji district of Hitachi. Then granites supply materials to the potters of Seto and Owari, while the earths used by the potters of Karatsu and Hizen are liparite. It may be stated that the extraordinary demand for stones that has spring up of late has raised the market price to about double what it was formerly.

On the whole the revenue from minor produce is comparatively small in State forests, as may be seen from these figures: 1892, 119,912 *yen;* 1895, 73,575 *yen*; 1898, 117,268 *yen;* 1901, 158,665 *yen.* The revenue from mushrooms, barks, seeds and acorns, and stones promises to grow larger, but that from other produce is dwindling chiefly owing to the larger extent of free utilization allowed to the people.

Industrial Uses of Wood.—Though the industrial uses of wood are quite active in our country, the industry as a business is limited in many cases in scope.

Carbonisation.—This is most important among the industrial uses of wood, work being carried on wherever a broad-leafed forest available for the purpose exists. The *Bicho* charcoal industry in Kumano, Kii, is most famous in this line throughout the country. The carbonisation industry has perceptibly been affected by the

greater use of coal than before as a substitute of charcoal, but as our customs prevent us from dispensing with a large consumption of charcoal, the industry will remain an important one.

Recently the work of procuring vinegar as by-product of carbonisation was started in several places, especially in the southern districts. Eight such workshops were on operation according to the latest inquires. Other chemical substances besides vinegar are produced at the shops.

The establishment of saw-mills of an improved style is another sign of the development of forest industries, as a recent large demand for sawn-timbers necessitates a certain unity of dimensions and a mode of conversion most convenient for transport. According to the latest available returns there were 14 saw-mills worked by steam, with an aggregate horse-powers of 317, and six saw-mills worked by water power with an aggregate horse power of 52.

Match-sticks.—Though the industry is one of recent origin, it forms one of the most important itmes of export of our wood industries, there being, according to the latest available returns, 85 workshops employing 3,552 hands. The export reached about 7,400,000 *yen* in 1901. The industry is most active in Hokkaidō, where the timbers from which the sticks are made abound, these being species of aspen and poplars.

The Pulp.—This business is of more recent origin than the preceeding industry, but it now occupies almost an equally important place. The pulp consumed in Japan formerly came from abroad, but the steady development of the paper industry having given a powerful incentive to the pulp-making business, Japan now possesses, according to the latest available returns, five mills worked by steam power. *Shirobe, Momi, Toga, Todo-matsu, Yezo-matsu,* etc. are generally requisitioned to supply the raw material. These species are at present found abundantly in Japan.

Other branches of the wood industry are camphor-making, bamboo-ware making, wheelwright, joiner's, turner's, cooper's work, etc. may be mentioned.

Generally speaking the forest industry is destined to show a far greater activity and development in Japan.

V. FOREST PLANTING AND TRANSPORT.

PLANTING.—The effect of reckless felling soon after the Restoration is glaringly shown to-day in the granite hills of Ōmi, Mino and in the districts bordering on the Inland Sea.

In order to check this wasteful system of felling, in 1875 the Government issued regulations for investigating the condition of State forests, with the special object of ascertaining the extent of the forests that had been felled, while in the following year an experimental forest-planting ground was established at Nishigahara, Oji. Again, in the next year, arrangements were made for encouraging the planting of State forests by private individuals by offering them a certain percentage of the profit arising from the produce of the forests planted in this way. The system has not proved quite as satisfactorily as was expected at first, though the areas planted under these conditions have reached about 80,000 *cho.*

ENCOURAGING PLANTING.—Prior to the carrying into effect of the Civic Corporation System sylvicultural works other than those carried on by the Government were few and far between, and it was only in forests belonging to private individuals in Yoshino and Muro that planting was carried on in anything like a systematic manner. Subsequent to the promulgation of that self government organization in which provision about communal funds were made, the idea began gradually to prevail that forest-planting was the best plan for augumenting these funds. The idea gained special force owing to the encouragement and the grant-in-aids extended by the local authorities in accordance with the provisions of the Forest Law subsequently enforced. The result was that during the two years of 1898 and 1899 no less than 426,595 *cho* of communal areas were planted, the number of seedlings and young trees planted totalling 801,022,357. The work generally received more or less assistance from the local authorities, that assistance generally taking the form of technical advise.

PLANTING IN STATE AND IMPERIAL FORESTS.—Meanwhile the work of planting went on steadily in the State forests. At first it mainly consisted of regenerating the cleared areas, and therefore not

much attention could be devoted to the deforested areas. In 1895 the investigation relating to open spaces was completed, and a working plan according to the high forest system was drawn up. From 1899 when the second State forest adjustment programme had been completed, the arrangement of open spaces could be made more satisfactorily than before. Between 1888 and 1898, 43,149.9 *cho* of State forest areas received planting, while during the three years ending 1901 the areas similarly treated reached 34,897 *cho*. In the former total 80 per cent. consisted of the work of regenerating cleared areas, and only 30 of planting waste spaces, while in the latter the open space work comprised 55 per cent., the remaining 45 consisting of regeneration work.

The extent of bare land being comparatively small in forests belonging to the Imperial Household, planting is carried out mostly for regenerating cleared areas, the planted areas of this description amounting to 12,510.4 *cho* during the ten years ending 1901.

Methods of Planting.—The system followed in planting operations must of course be different according to the locality and other causes, always keeping in view the main object of producing a perfect forest formation capable of returning a regular revenue.

The plans pursued in pursuance of that maid object are these :—

1. Natural regeneration.
2. Sowing.
3. Planting of young plants.
4. Planting in dunes and patches of shifting sand.

The first method was almost universally adopted in former times, but this is no longer popular in these days when the knowledge of forest management possessed by foresters has come highly developed, for if that method is the easiest and the least troublesome, nontheless it is not advisable in view of the necessity of effecting a thorough improvement in our sylvicultural conditions. However on steep slopes and in protection forests demanding special treatment this method is still used to extent.

Generally sowing is made to supplement the necessarily fickle operation of the method of natural regeneration. In cases when sowing is carried on by itself it is done by ridge-sowing, broad-cast-

sowing, line-sowing, etc. Oaks, beeches, *Aka-matsu*, etc can be grown satisfactorily by sowing.

However, the planting of young trees is the commonest method in artificial regeneration, this method being adopted in the greater number of cases in State forests and in forests belonging to the Imperial Household. Generally seedlings are transplanted to the woods after they have grown two or three years in the nursery, the tree of planting per *cho* ranging between 4,500 to 6,000 young trees. As it is hardly possible to expect all of them to grow vigorously in the new soil, about 20 or 30 per cent. of the planted young trees must be supplemented in year or two after the transplanting.

The method of planting by means of cuttings is practically identical in operation and result with the method described above, only that this method cannot be adopted for all species of trees. In Higo and Hyuga the regeneration of *Benko Sugi* has been exclusively carried out by this method, while it is similarly applied to *Doro*, *Hakoyanagi*, etc. growing in Hokkaidō, *Hiba* in Aomori and Noto.

In dunes and in plains of shifting sand, works to prevent earth from slipping away should first be constructed, these works generally consisting in straw-work or bramble-work or sometimes in sods. The trees selected for this particular method of planting are generally *Kuromatsu* and *Hageshibari*, mixed at the rate of 3 of the former to 2 of the latter. Planting should be done at the rate of 14,000 to 18,000 per *cho*. Travellers travelling from Shimonoseki to Kobe by the Sanyo Railroad must notice in Bizen and Harima many hills of reddish soil covered with young pine trees planted in terraces. Similar pine-clad terraces are seen along the Tōkaidō route. All those plantations have been made by this particular mode of planting.

Extent of Planted Areas. — The extent and nature of the planting operations carried on in the State forests and in the forests belonging to the Imperial Household during the ten years ending 1901 may be demonstrated by the following figures :—

STATE FORESTS.

	Conifers.		Broad-leafed trees.		Total.	
	Area. (cho).	No. and quantity.	Area. (cho).	No. and quantity.	Area. (cho).	No. and quantity.
Natural Regeneration ...	15,235.2	—	2,032.3	—	17,267.5	—
Artificial Regeneration..	41,707.2	306,516,463 6,971 koku	6,865.5	2,346,900 23,300 koku	485,727	329,938,363 30,271 koku
Total	56,942.4	306,516,463 6,971 koku	8,897.8	2,346,900 23,300 koku	658,402	329,938,363 30,271 koku

IMPERIAL HOUSEHOLD FORESTS.

Natural Regeneration ...	—	—	—	—	—	—
Artificial Regeneration..	11,844.6	51,491,518 1,865 koku	891.2	2,921,853 1,220 koku	12,735.8	54,413.317 3,085
Total	11,844.6	51,491,518 1,865	891.2	2,921,853 1,220 koku	12.735.8	54,413,371 3,085
Grand Total ...	68,787.0	358,007,981 8,836	9,789.0	26,343,753 24,520	78,576.0	384,351,734 33,356

KIND OF PLANTED TREES.—As may be seen from the foregoing table, the areas planted with conifers are about nine-fold those planted with broad-leafed trees, and this predominance of conifers over trees of the other description will form a characteristic feature of our future sylvicultural system. The reason why conifers are so much preferred to the other kind of trees is because that with the present activity in the work of house building and in the carrying on of public works the timbers of the conifers are more in demand than that of broad-leafed trees, so that at present except in retired districts most of the sylvicultural undertakings are carried out with the object of producing timbers of conifers.

As to the relative ratio of the different species planted, *Sugi* occupied about 48.3 per cent. of the entire area, pines 25.6 per cent., *Hinoki* 8.8 per cent., *Keyaki* 3.3 per cent., the remaining 1.7 per cent. being planted by two or three different species. Again, in the relative ratio of conifers, *Sugi*, *Aka-matsu*, and *Hinoki* predominated over the others, while in broad-leafed trees *Keyaki*, camphor-trees, *Kunugi*, etc. surpassed the others.

This overwheling predominance of conifers is a point which

ought to demand the serious consideration of all those interested in our forest policy. There is another fact that similarly demands their attention and that is the growing tendency to prepare pure forests instead of mixed forests. In fact, of the forests thus far stocked no less than 98 per cent. are of pure forests, only 2 per cent. being mixed forests. This remark applies both to conifers and broad-leafed trees. But it should be remembered that a pure forest is liable to give rise to various evils, besides being attended by difficulties in management. Indeed this point has lately begun to be perceived by foresters and others concerned, who acknowledge the advantage of mixing more or less light-demanding species with conifers. At least this is the policy now pursued in State forests, where the planing of broad-leafed trees is attended to so long as circumstances permit.

Nursery-Beds.—The efficacy of the work of forest-planting depending essentially on the soundness of the seeds and seedlings and also on the skill of the employed labor the utmost care is exercised in those respects. In the State forests and Imperial Household forests the seeds or seedlings to be used are only those that are collected or grown on the spot. The nursery-beds attached to those forests numbered 407 at the end of 1900, with an aggregate area of 622.1 *cho* for State forests and 111 with an area of 101.9 *cho* for other forests. Then in order to procure as cheaply as possible the labor required in tending the nurseries, and also to facilitate the work of transplanting, these beds are located in places combining as much as possible these two conveniences. They are laid out in as many places as possible.

The seedlings grown in nursery-beds are generally transplanted after full three years' growth in the beds, and when they have attained the height of 1½ to 2 *shaku*. Some species, *Sugi* for instance, admit of being transplanted after two years' growth, while some broad-leafed species, such as *Hiba*, *Koyamaki*, etc. require five or seven years' nursery growth. Of course in places where the injury from game is apprehended even *Sugi* must be left to stand five or six years in the beds. The quantity of seeds sown and the number of seedlings grown in State forests nurseries during the ten years ended 1901 are given in the following table:—

Year.	Conifers.		Broad-Leafed trees.	
	Quantity of Seeds. *Koku.*	No. of Seedlings.	Quantity of Seeds. *Koku.*	No. of Seedlings.
1892	18,083 *koku.* 15,000 No.	5,158,354 No.	18,331	940,109
1893	16,009 523,400	4,963,780	31,267	765,851
1894	24,793 544,000	7.196,173	52,882	780,746
1895	21,805 501,400	7,560,593	52,681	1,611,997
1896	18,190 732,880	11,758,563	65,990	1,847,554
1897	23,799	12,006,878	32,835	1,013,359
1898	28,748 324,716	13,377,054	48,114	1,298,175
1899	78,021	14,359,413	140,528	634,667
1900	107,554	20,896,129	313,750	1,128,182
1901	145,811 70,000	29,768,092	398,189	2,469,590
Total	482,813 2,846,396	127,045,029	1,154,527	12,490,230

The sudden activity of the nursery work from 1899 was due to the fact that in that year a special account system was allowed in forestry management. Then the rate of conifers and broad-leafed trees in the seedlings raised amounted to 10 of the former to 1 of the latter. In the conifers, *Sugi, Hinoki, Kara-matsu, Aka-matsu* predominated over others.

Treatment of Planted-Areas.—In newly-planted areas, except in areas of protection planting, the cutting of grass is generally made every year for the space of three years subsequent to the planting. Then during the next ten years the grass-cutting is done every other year. Thinning is carried out for tending the growth of young trees and for preserving the forest-aspect. During the five years ended 1901, 13,588.3 *cho* of State forests were subjected to this thinning process, by which 229,146 cubic *shaku* of wood for industrial uses was obtained, besides, 156,019 stacks of firwood, and 192,630 bundles of branch-litters. These intermediate forest produce are growing more and more valuable owing to the greater demands on them for various purposes.

Arboricultural experiments.—Arboricultural experiments

were first started at Nishigahara in 1876, but it was not until after 1897 that the work became really brisk. In that year eight experimental nurseries were established in different typical places, and, under the supervision of the chiefs of the nearest Major Forestry Offices, they were made to carry out investigations relative to sylvicultural climate, selection of species best calculated to improve the forestry aspect, germination and growth of young plants, and such subjects. The overseers of the nurseries were made to submit to the Minister of Agriculture and Commerce reports on the results on the investigations. At the same time the central nursery established at Kami Meguro, suburb of Tokyo, under the direct control of the Forestry Bureau, was made to examine the reports sent in from the local offices.

EXOTIC TREES.—The experiments on the exotic species being still incomplete, it is not possible to give any authoritative statement as to the relative adaptability to Japanese soil of the various species planted in the nurseries. Judging from the aspect of growth, the following species are likely to prove a valuable addition to Japanese sylviculture.

Robinia Pseudoacacia, L. (Imported from the U. S. A.). Sown in the nursery in 1900, the plants have already grown to the height of over 4 metres. The principal merits of this species are quick growth, adaptability even to poor soil, and the presence of strong reproductive power, shoots springing up from the side-roots. As a substitute for the indigenous *Hage-shibari* the tree may serve even better than that shrub for the purpose of preventing the drifting of sand and landslip. The wood is also hard and well suited for earthworks.

Pinus rigida (Imported from the U.S.A.). Sown in 1900, the plants have grown over 1 metre high. In respect to strong reproductive power, hardy character, and adaptability even to poor soil, this species resembles our *Aka-matsu* very much, and like it the species is apparently suited for dunes and shifting sands.

Populus monilifera (Imported from the U.S.A.). The young plants measuring 0.7 metre in height were imported from that country in 1899 and transplanted to the nursery. They have

attained the height of over 4 metres. Both in growth and reproductive power they are very strong, being capable of artificial regeneration by cuttings. As material for match-wood, the tree is as excellent as the indigenous popular.

Juniperus Virginiana (Imported from the U.S.A.). Those sown in 1890 have attained the height of 1½ metres, and those in 1900 that of 1 metre. Judging from the experiments thus far carried out, it does not seem difficult to acclamatise the species to Japanese soil. In that case the wood will lead to encouraging our lead-pencil industry, which has failed to attain any marked development for lack of suitable wood.

Of the other exotic species experimentally planted in the nurseries, the German *Alnus glatinosa*, the American *Pinus strafus*, the German *Cedrus deosata*, and some Himalayan species are likely to prove valuable trees for planting in exposed places. The Himalayan *Cedrus deosata* also makes a fine garden ornament.

FOREST-ROADS AND RIVER-TRANSPORT WORK. — Before the Restoration, owing rather to the excessive care exercised by feudal princes for the preservation of their forests and the enforcement of what we may call the "closed door" policy of administration in their dominions, there were grave obstacles to the efficient management of forests and their exploitation. Endeavors have been made for obviating those obstacles, and in such of those State or Imperial Household forests that are of a permanent nature or that admit of financial treatment, the work of constructing forest roads has been carried out so far as circumstances permitted.

FOREST ROADS.—According to the existing rules forest-roads are divided into two kinds, main roads and subsidiary roads. Further, they are divided into railed-roads, cart-tracks, roads made of wood, foot-paths and cattle-paths. The first three are considered as main-roads and the latter two as subsidiary roads. A main-road must be connected with a railroad or with a highway, while a subsidiary-road must be connected with a main-road. A highway, though intended for general traffic, often receives from the Department of Agriculture and Commerce some help towards its extension and repair, provided such highway is judged to facilitate the transport of timber.

Owing to the inconvenience of procuring labor and materials for construction, the cost of constructing forest-roads is generally hgih, the average per *ri* of main-road amounting to over 6,500 *yen* and that of subsidiary-road to about 4,000 *yen*. The cost of bridge-making is equally high, as a bridge in a forest-road is to be constructed over a rapid steam liable to overflow. This question of expenses very much therefore obstructs the progress of the construction of forest-roads, so that during the ten years beginning in 1892 the roads constructed in State forests have not exceeded 776,677 metres in length, of which the following were constructed from 1898 to 1901:—

	Metres.	Expense. *yen.*
Main-Roads	132,000	212,575
Subsidiary-Roads	109,600	66,102
Total	241,600	278,677

The roads recently constructed in the Imperial forest areas follows:—

	Metres.	Expense. *yen.*
Main-Roads	44,140	55,833
Subsidiary-Roads	28,080	26,708
Total	72,220	82,541

Besides the above, the tracks laid with 12 pound-rails in the Imperial forests at Kiso measure 8,212 metres, the expense required being 14,680 *yen*.

In the colder districts, such as Hokkaidō or the north-eastern part of Honshu, the wood is largely carried over hardened snow in winter at a very small expense.

River Transport of Timbers.—The transport of timber by rivers has been carried on extensively from former days, the conveyance of Kiso wood on the river Kiso, of Nagakizawa wood on the river Noshiro, and of Kitayama wood on the Shingū being some of the important cases of the regular river-transport of timber. However, in order to make rivers serve still more efficiently this purpose, all the obstacles in their course should be removed, the river-banks should

be made strengthened, while in the lower course where a wood-depot is to be formed damming-work should be constructed. From 1899 to 1901 the obstacles were removed over 32,800 metres of river-beds and the stones thus taken out of the bottom covered 49,176 cubic *tsubo*.

VI. WOOD PRODUCE.

General Remarks.—Data on forestry yield being unavailable in the case of privately-owned forests, we must content ourselves in this section with giving the data in connection with the State forests measuring about 7,500,000 *cho* and the Imperial forests measuring about 2 millions.

It is hardly necessary to state that the yield from the forests varies considerably according to position and local conditions, and that while the harvest of convertible timber depends upon the species of the trees and their growth, the amount of the financial yield depends upon the locale of the growing stock, the relative facilities of transport, and the demands on the market.

Harvest of Convertible Timbers.—The harvest of State forests continues to increase with the progress of the work of management, and, compared with what it was 10 years ago, the yield at present shows an increase of about 35 per cent. as stated in the following table :—

	1892.	1895.	1898.	1901.
	Shakujime.	*Shakujime.*	*Shakujime.*	*Shakujime.*
Timber...	984,464	1,107,941	1,010,621	1,707,813
Firewood	3,361,566	3,544,068	3,609,036	4,158,186
Total	4,346,030	4,652,009	4,619,657	5,865,999
Forest Area (*cho*)... ...	7,541,633	7,715,793	7,773,155	7,586,201
Yield per *cho*	0.58	0.58	0.59	0.77

Note :—In the foregoing figures the harvest of root, stump-wood, and faggots is excluded, while fractions of a *shakujime* are also omitted. A *shakujime* measures 12 cubic *shaku* and corresponds to about a third of 1 cubic metre. This remark applies to all the subsequent tables of a similar description.

The increase of the harvest has been brought about by a longer thining made possible by the improved method of management and by the extension of the utilization area which was in turn due to

development of means of transportation. Indeed the utilization area of State forests increased from about 18 per cent. in 1892 of the whole area to about 21 per cent. in 1901. In other words, the rate of utilization area increased during the period in question by 17 per cent. as against 35 per cent. of the volume of the timber-harvest.

The harvest, according to the foregoing table, increased during the specified period from 0.58 *shaku-jime* per *cho* to 0.78; and these compared with the respective utilization areas correspond to 3.2 to 3.7

The volume of the harvest as compared with the volume of the growing-stock in the State forests is extremely small, and indeed does not reach even one half of what it should be. The reason of this abnormal yield must be sought in the fact that in most of the forests situated in hilly districts the presence of miscellaneous trees is seriously affecting the growth of timber-trees, while in most of the forests the growing-stock has not yet attained the normal "age-classes." Further, the Government is disposed to minimize, till the management programme is completed, the volume of the yearly fellings, while the imperfect means of transport, absolutely considered, very much affect the extent of the utilization area.

FINANCIAL YIELD.—The State-forests, hampered as they are from various inconvenient conditions, are placed in a highly disadvantageous situation, so far as the financial side of yeild is concerned. This point is significantly shown in the following figures showing the yield during the 10 years ending 1901 :—

	1892. *yen.*	1895. *yen.*	1898. *yen.*	1901 *yen.*
Timbers	342,556	555,906	767,842	1,369,171
Firewood	213,709	299,449	372,515	486,141
Root, Stump - wood, Fagots, etc.	66,324	19,348	28,708	37,880
Minor Produce	120,229	73,755	142,904	158,655
Rent	23,618	25,361	46,323	73,689
Sundries	44,623	24,801	93,374	50,986
Total	811,059	998,620	1,451,666	2,176,522
Total Area (*cho*)... ...	7,541,633	7,715,793	7,773,155	7,581,201
Yield per *cho*	0.108	0.129	0.187	0.288

Note :—In the above table, fractions of a *yen* are omitted, except in the figures representing the yield per *cho*.

Though absolutely considered, the yield of only 0.288 *yen* per *cho* is exceedingly small, still it must be regarded with satisfaction on account of the relative progress that it indicates. The record for 1892 as compared with that of 1892 shows an increase of 19 per cent., advanced to 73 per cent. in the next three years, and to 260 per cent. in the subsequent three years. Again, when compared with the utilization area only, instead of the whole area, the yield per *cho* increased during the ten years from 0.647 *yen* to 1.386 *yen*.

This creditable progress, relatively speaking, has been brought about not merely by an increase in the volume of the harvest, but principally by the recent growing demand for timber with the consequent rise of the market price, and by the diminution of transport expenses owing to the greater facilities offered by the improved means of communication. Above all the receipt from timbers has been strikingly increased, these timbers being mostly the timber of conifers such as *Sugi*, *Hinoki*, *Hiba*, *Momi*, *Akamatsu*, etc. Poles produced by thining were till ten years ago practically destitute of value but these now command a good price on the market. The rapidity with which the yield from timbers has advanced during the ten years under review is indeed remarkable, for while it has been quadrupled during that period the yield from firewood has only been doubled.

Expenditure.—With the increase in the gross yield, the expenditures have necessarily been expanded. In 1892 the expenditure stood at 522,762 *yen*, but during the subsequent ten years the amount has been almost doubled and has risen to 1,029,966 *yen*. This increase, though partly due to the rise of wages and of the price of commodities, a phenomenon inseparable from the progress of the time, was more attributable to the expanded scope of improvement measures:—

Year.	Area.	Management Expense.	Working Expense.	Total.	Expense per *cho*.
	yen.	*yen*.	*yen*.	*yen*.	*yen*.
1892	7,541,633	423,146	99,616	522,762	0.070
1895	7,715,793	402,789	180,085	582,874	0.076
1898	7,773,155	553,016	364,674	917,690	0.118
1901 hs	7,581,201	669,149	330,817	1,029,966	0.137

Note:—The management expense includes salaries of officials, office expenses, travelling expense, repair of offices, etc.; while the working expense comprise the cost of felling, transport, planting and all the other items incidental to the working of forests.

As stated in the foregoing table the average managing expense per *cho* increased during the ten years under review from 0.056 *yen* to 0.082 *yen*, while the average of the working expense increased from 0.013 *yen* to 0.044 *yen*. In other words, while the rate of increase of management expenses is about 60 per cent., that of working expenses is as much as 340 per cent. The ratio of management expense is rather high as compared with working expense, the former constituting, on an average, 68 and the latter 22, if we take the total expense as 100. This comparatively high rate of management expense is explained by the enormous extent of the State forests, and especially the fact that most of them require a thorough re-organization, and all these involve extraodinary trouble and expense. However, the ratio between management expense and working expense is gradually recovering normal proportion, for while in 1892 the management expense bore to the working expense the ratio of 21 to 5, in 1901 the proportion became 21 to 10. The proportion is sure to become more satisfactory when the second forestry adjustment programme now being carried out shall have been completed.

Profit.—Forestry yield is obtained by deducting from the gross receipts the working expense, while the net profit consist of what remains after the management expense has been deducted from the remainder. Calculated in that way, the net profit of State-forests stands thus:—

Year.	Total Area.	Gross Receipts.	Gross Disbursements.	Net Profit.	Profit per *cho.*
1892	7,541,633	811,059	522,762	288,292	0.038
1895	7,715,793	998,620	582,874	415,746	0.054
1898	7,773,155	1,451,666	917,690	533,976	0.069
1901	7,586,201	2,176,522	1,029,966	1,146,556	0.151

The net profit per *cho*, as stated in the foregoing table, has increased from 0.038 to 0.151 compared with the utilization area.

The rate per *cho* was 0.212 *yen* in 1892 and it advanced to 0.72 *yen* ten years after.

Data About the Imperial Forests.—As forests that were comparatively regular in aspect were selected as Imperial forests on the occasion of setting apart a part of State forests as property of Imperial estate, the forests belonging to this special class, besides being easy to manage, are rich in conifers and valuable timber-trees, so that the harvest is more satisfactory than that in State forests. The harvest during the ten years commencing in 1892 is stated below :—

	1892. *Shaku-jime.*	1895. *Shaku-jime.*	1898. *Shaku-jime.*	1901. *Shaku-jime.*
Timbers	803,026	588,692	685,193	1,110,324
Firewood	723,321	500,820	555,468	848,316
Total	1,526,347	1,089,512	1,240,661	1,958,140
Total Area	3,478,007	2,108,720	2,091,066	2,093,404
Harvest per *cho*	0.44	0.51	0.59	0.94

The average harvest per *cho* that was 0.44 in 1892 increased to 0.94 ten years after, an increase of more than two-fold. The statistics on financial side are as follows :—

	1892. *yen.*	1895. *yen.*	1898. *yen.*	1901. *yen.*
Timbers	226,709	327,644	752,585	845,139
Firewood	50,131	50,604	62,867	83,291
Fagots, Stump-Wood, root, etc....	163	3,141	3,196	4,636
Minor Produce	13,655	18,619	22,894	29,402
Rent	19,724	29,433	54,770	77,667
Sundries	28,647	30,150	34,346	74,089
Total	340,027	459,591	930,658	1,114,224
Total Area	3,478,007	2,108,720	2,091,066	2,093,404
Yield per *cho*	0.099	0.218	0.445	0.532

Just as in the case of the State forests, with the progress of the work of management along the economic line, the volume of the harvest and the amount of the gross receipts are gradully increasing, to make a still greater development as that work proceeds. Then the

financial results of the administration of the Imperial forests are somewhat better, owing to the reasons mentioned above, than in the case of the State forests, for the gross receipts that stood at 0.095 *yen* per *cho* in 1892 advanced to 0.533 in 1901. As might naturally be expected, expense has also advanced.

	1892.	1895.	1898.	1901.
Total Area (*cho*)	3,478,007	2,108,720	2,091,066	2,093,404
Management Expense (*yen*) ...	106,154	110,138	115,291	147,734
Working Expense (*yen*)... ...	208,157	195,594	369,954	496,686
Total (*yen*)	314,311	305,732	485,245	644,420
Expense per *cho* (*yen*)	0.090	0.145	0.232	0.308

In respect to the increase of expense, the Imperial forests are very much like the State forests, for during the period under review the rate per *cho* increased from 0.09 *yen* to 0.308 *yen*.

However, in contrast to the corresponding state of affairs in State forests, the ratio between the management expense and the working expense is entirely reversed, the former constituting only 27 and the latter 73, out of the total expenses of 100, This comparative smallness of the management expense in the Imperial forests is explained by the fact that the forests, owing to their convenient location, and on account of their being comparatively well-organized do not require any large amount of money to be spent on them. Thus while State forests required in 1901 management expense amounting to 0.092 *yen* per *cho* the corresponding figure in Imperial forests was only 0.071. On the other hand, the average working expense of State forests in the year mentioned was 0.045 *yen* per *cho* against 0.337 in case of the other forests. This remarkable difference between the two is ascribable to the fact that while in State forests the forests-produce to be sold is generally done so in the shape of standing-trees, in the Imperial forests whatever produce becomes disposable is directly utilized by the Household itself which of course undertakes the work of conversion.

The net profit from the Imperial forests as calculated by deducting the gross disbursements from the gross receipts was minue 22,640 *yen* in 1892, the loss being at the rate of 0.007 *yen* per *cho*s Subsequently conditions were restored to their normal aspect, for in

1895 net profit grew to 0.045 *yen* per *cho*, to 0.125 in 1898 and to 0.138 in 1901. In other words, during the last seven years out of the ten under review, net profit was increased by 0.093 *yen* per *cho*.

VII. OFFICIAL SUPERVISION OF THE FORESTS.

Controlling Offices.—Considerable changes have taken place as to the official repository of power in regard to managing and supervising forests since the feudal princes have surrendered their fiefs to their sovereign liege in 1868. The forests held by them have become converted into State property. Suffice it to state that it was in 1878 that the existing Forestry Bureau was created and that affairt relating to State forests and to forests at large were for the firss time placed under the control of a special office and that something like a regular system began to be evolved. This tendency became more manifest with the transfer of the Bureau in 1881 to the control of the Department of Agriculture and Commerce, a Department of State that was created in that year. Subsequently the forestry policy of the Government has gone on acquiring greater importance and consistency.

According to the existing system, the Minister of Agriculture and Commerce is the supreme supervisor of all matters relating to State forests and to forests at large, and, subject to his control, the Forestry Bureau takes charge of all matters relating to the administration and scientific treatment of forests. The staff of the Bureau comprises, besides its director, four forest commissioners and ten clerks, and these attend to the working and treatment of State forests and supervision of private forests.

The right of supervision of private forests is derived from the Forest Law promulgated in 1897. In accordance with the provisions therein set forth, the Government extends to utilization forests suitable economic treatment of a positive nature, while, on the other hand, the negative policy of prohibiting felling and similar restrictive measures is extended to protection forests. In all these matters the respective local Governors are made to act as supervisors in the

first instance, the right of issuing final directions resting with the Minister of Agriculture and Commerce.

The control of State forests is conducted in accordance with Imperial Ordinance No. 18 issued in 1886, by which a regular system of management was elaborated. By that system the management is conducted by sixteen Major Forest Offices and 325 Minor Forest Offices.

Forest Offices and Jurisdiction.—The following table shows the location, extent of jurisdiction, etc. of the Major Forest Offices.

Names of Major Forest Offices.	Location	State-Forests under Control (in thousand *cho*).	No. of Minor Forest Offices.	No. of Protection Stations.
Aomori	Aomori, Mutsu...	946	25	113
Akita	Akita, Ugo	1,091	22	94
Iwate	Morioka, Rikuchū	424	16	50
Miyagi	Sendai, Rikuzen	778	20	61
Fukushima ...	Fukushima, Iwashiro ...	508	20	81
Tokyo	Tokyo, Musashi	936	31	84
Nagano	Nagano, Shinano	931	17	54
Ishikawa... ...	Kanazawa, Kaga	497	12	39
Ōsaka	Ōsaka, Settsu	69	18	61
Okayama... ...	Okayama, Bizen	108	18	75
Hiroshima ...	Hiroshima, Aki	174	25	83
Ehime	Matsuyama, Iyo	135	12	49
Kōchi	Kōchi, Tosa	201	19	77
Fukuoka... ...	Fukuoka, Chikuzen... ...	103	20	76
Kumamoto ...	Kumamoto, Higo	229	26	76
Kagoshima ...	Kagoshima, Satsuma ...	446	24	122
Total		7,576	325	1,199

The foregoing table will show that the extent of the Major Forest Office's jurisdiction lies between the two extremes of 1,091,000 *cho* of Akita and 69,000 *cho* of Ōsaka, the average for the whole being 480,000 approximately. A greater diversity is noticeable in the jurisdiction of Minor Forest Offices, this diversity being unavoidable in such a country as Japan where systematic forestry management is still in the inception stage and where means of communication are as yet imperfect, and the formation of forests is irregular. Thus while the Matsuyama Minor Office controls only

2,000 *cho*, that of Iiyama under the Nagano Major Office, controls as much as 396,000 *cho*. The average for all the Offices is 23,000 *cho*. It is natural that, with the progress of the work of economic management, the extent of jurisdiction of a Major and a Minor Forest Office will become more limited.

The number of protection stations also differs according to places. The average number to each Minor Office is three to five, but in some exceptional cases as in that of the Tsunodate Minor Office which is subordinate to the Akita Major Office the number is as many as eight.

The foregoing organization applies to the State-forests under the control of the Department of Agriculture and Commerce but there are other kinds of State-forests in charge of other Departments of State.

The State forests in Hokkaidō and Formosa are subject to the supervision of the Minister of Home Affairs.

The State forests in Okinawa, the seven islands of Izu, and Ogasawara, though belonging to the jurisdiction of the Department of Agriculture and Commerce, are left for the convenience of the local administration, in charge of the respective local authorities who manage them subject to the supervision of the Minister of Agriculture and Commerce.

VIII. FORESTRY EDUCATION.

Collegiate Courses.—The remark that the progress of industry is a faithful reflection of the progress of education is fittingly exemplified in the case of our forestry industry, for the recent striking development in our forestry economy must be regarded as an outcome of a similarly striking development in sylvicultural education.

It was in 1882 that the Tokyo Dendrological School, the first of its kind in Japan, was established at Nishigahara, but now at no less than 62 institutions the science and art of forestry is taught. Of that number three are imparting collegiate education, five a special course on forestry of secondary education grade, another five

are giving a special course on the same subject of a somewhat lower grade, while the remaining 48 are imparting a general knowledge of forestry as a subsidiary subject to one or another of the main courses of practical education. It ought to be noted here that formerly all the important educational organs on forestry were subjoined to the Department of Agriculture and Commerce, but as it was judged more convenient to have them transferred to the control of the Department of Education, this transfer was effected in 1890.

The College of Agriculture of the Imperial University of Tokyo, the Sapporo Agricultural College, and the High Agricultural and Dendrological School at Iwate, are the three collegiate institutions in question.

In all of those collegiate courses, in compliance with the demand of the Government forestry authorities and of general foresters, special attention is paid to the training of specialists who are to combine adequate scientific and practical knowledge on forestry, and who, on leaving school, are qualified to attend with efficiency to the duty of managing and improving our forests. The Government is giving special encouragement to the study of this useful science, by offering to the graduates comparatively good posts.

The College of Agriculture is also provided with a briefer course on agriculture and dendrology.

Schools of Secondary Grade.—The five schools of secondary education grade where a special course on dendrology is taught are as follows:—

Kiso Dendrological School	Nishi Chikuma, Nagano-ken.
Aichi Agricultural and Dendrological School...	Hekkai-gun, Aichi-ken.
Nara „ „ „ „ ...	Yoshino-gun, Nara-ken.
Shimane „ „ „ „ ...	Yatsuka-gun, Shimane-ken.
Arima „ „ „ „ ...	Arima-gun, Hyogo-ken.

These schools are either public or communal institutions, and are under the direct control of their respective local Governors. The Department of Education confines its interference merely to

matters regarding the unity of national practical education. Those schools receive a subsidy from the Treasury, the object of that subsidy being to encourage the cause of practical education. Then the students enjoy equal treatment as those at ordinary middle schools in respect of conscription service, ordinary civil service, etc.

As these schools do not date back very far, they have not yet turned out any graduates, but the number of students is steadily increasing, the attendance being 418 in all at present.

Schools of lower grade.—The five schools of somewhat lower grade than the preceding ones are apprentice schools enjoying a grant-in-aid from the Treasury and are imparting an elementary knowledge of forestry to the students. The schools are maintained by communities which, from local circumstances, are interested in bringing up young men qualified to attend to forestry management and to exploit the forest industry. The course of instruction extends for three years, and according to the latest available returns the students number 417 for all the schools.

Other Schools teaching forestry.—Of the schools whose curriculum includes forestry 37 are of the secondary education grade, and 11 are of the higher primary education grade. Established long time back the list of graduates includes 1,323 for the former and 108 for the latter, while, at present the schools of higher grade have 4,364 attendants and the others 782. As most of those schools teach agriculture, fishery or stock-farming besides giving instruction in forestry, the field of their service is very wide and their service may be easily available even in places where the engagement of forest specialists is not possible.

Training Schools.—Lastly a short remark may be made about the Forestry Training School established at the Experimental Forestry Station at Meguro under the control of the Forestry Bureau of the Department of Agriculture and Commerce. The school is intended to train men who are to attend to the management of State forests and to engineering work, so that the course of study comprises forestry, geodesic and triangular surveying and topographical-drawing. It is the main idea of this institution to impart

training of a thoroughly practical nature to as many students as possible within the shortest terms compatible with the demand of instruction.

IX. FORESTRY LEGISLATURE.

The Forest Law already mentioned contains provisions about the control of utilization forests, protection forests, forest police, punitive rules, etc. A number of Imperial Ordinances for putting in operation the said law were promulgated at the same time, these Ordinances relating to the Local Forestry Council Rules, Conversion and Release of Protection Forests, Rules for putting the Forest Law into Operation, Rules for compensating Damage of Protection Forests, Rules for managing Protection Forests, Rules relating to the Protection Forest Register, etc. The Register in question is of two kinds, one relating to privately owned forests and to be kept at the respective local offices, and the other relating to State forests and to be kept at the Major Forest Office concerned.

The control of State forests and plains is regulated by the Law relating to State Forests and Plains promulgated in March 1899 and it has attached to it a number of Rules and Regulations for putting it in execution.

The Law relating to the Restoration of State Forests and Plains to Original Owners was issued in April 1899, and by issuing at the same time several rules appertaining thereof measures were devised for returning to original owners State forests and plains incorporated into State property, provided the alleged owner's claim is judged to rest on valid ground. This special arrangement has been adopted in view of the fact that not a few cases of incoporation hastily made soon after the Restoration have subsequently been discovered to have been not quite justifiable.

The existence of the Forestry Fund as an account independent of general account is a special feature in regard to the finance of forests and plains belonging to the State, the fund in question being employed for the special exploitation of forests, such as the survey-

ing of State forests and plains, drawing up of their working plans, their planting, purchase of forests, etc.

The official organization of offices dealing with State forests and plains has been determined either in the shape of Imperial or Departmental Ordinances.

PRIMARY INDUSTRIES.

SECTION III.

MINING AND METALLURGY.

Introductory—Geological Formation and Mineral Deposits—Mining and Metallurgy—Condition of Mine-Workers—Mining Legislation.

I. INTRODUCTORY.

Before the Restoration.—As a result of the development in our seaborne trade and also in our railroad traffic and our industries in general, the demand for mineral products has increased apace, and the mining industry has become an important factor of the national economy.

Nothing accurate is known about the origin of our mining industry, but history records that, as early as in the 7th or 8th century, gold, silver, copper, iron, coal, and petroleum were produced. At the beginning of the 9th century, the Ikuno silver-gold mine, Handa silver mine, Hosokura silver-lead mine, and the two copper mines of Yoshioka and Osaruzawa were opened up. During the 15th century and the time of the Tokugawa Shogunate, many important mines were opened including the gold-silver mines of Sado, Innai, Kamioka, Mozumi, Serigano, Yamagano, and Shikakago; the Kosaka silver-copper mine: the copper mines of Ashio, Besshi, Ani, Arakawa, Hibira, and Omodani; the Ichinokawa antimony mine; the Kuratani silver-lead mine; the Taniyama tin mine; the Kamaishi iron mine, and the coal mines of Miike, Takashima, and Akaike. The working of these mines was, however, carried on a small scale, and they attracted but little attention. It was subsequent to the Restoration that phenomenal progress has been made in the mining industry.

After the Restoration.—The Government addressed itself to the task of protecting and encouraging the development of mining industry; engaged, in pursuance of that policy, foreigners as mining engineers, geological surveyors, and teachers. At the same time the Government undertook to work the principal mines, where Western methods were adopted in the departments of mining, metallurgy, and conveyance. The idea was to make these mines models for the benefit of private operators. Marked progress has since been made, and the output of minerals has steadily advanced. Such were the gold-silver mines of Sado and Ikuno, and Innai silver mine. Seeing that the private working of mines was becoming pretty extensive, the Government gradually transferred the mines which it was working itself to private exploitation, reserving, however, those which were especially necessary to the State. Moreover, the law relating to mining was instituted to define the right of the mining operator, contributing thereby to the progress of that industry.

The putting in practice of the mining regulations in 1892 swept away all the existing evils that had interfered with a freer and sounder development of the industry and therefore extended a helping and protecting hand to the mining operator. This together with the increase of technical knowledge has led to remarkable progress being made in the mining industry.

II. GEOLOGY AND MINERAL DEPOSITS.

Distribution of the Strata.—The geological formations of the Japanese Isles exist in the following proportions, taking the whole area of the land as 100:—

I. SEDIMENTARY FORMATION.

Archaean	3.78
Palaeozoic	10.24
Mesozoic	7.95
Cainozoic	45.84
	67.81

II. IGNEOUS ROCKS.

Older Period	11.27
Younger Period	20.92
Total	32.19
	100.00

In other words, the proportion of sedimentary rocks to igneous rocks is 2 to 1 in the whole area, while in the former those belonging to Tertiary and earlier formations bear the proportion of 1 to 2 to those belonging to younger formations.

Archaean	Crystalline Schist System Gneiss System	Eclogite, Serpentine, Granite.
Palaeozoic	Chichibu System (Carboniferous) Kobotoke System	Peridotite, Gabbro Diabase, Porphyrite.
Mesozoic	Triassic Jurassic Cretaceous	Diorite, Diabase, Porphyrite, Porphyry, Periodite, Gabbro, Granite.
Cainozoic	Tertiary Quaternary	Liparite, Andesite, Basalt.

GEOLOGICAL FORMATIONS.—The geological formations of the Japanese Isles, composed of the above-mentioned rockes, are in the two arcs of Northern Japan and Southern Japan stretching from Hokkaidō in the northeast to Kyūshu in the southwest, and also a chain of islands of Okinawa and the mountain system of Formosa. Of the foregoing geological divisions Northern and Southern Japan and the Okinawa archipelago are curved towards the southwest.

Outer Arc.

Then of the two arcs, the outer one facing the east is comparatively perfect in geological formation, the sedimentary rocks composing it being on the whole symmetrically developed. On the other hand, the Inner Arc facing the west is extremely complicated in the formation and abounds in crevices and dislocations of strata and in eruptive rocks. Under the circumstances, the distribution of valuable ores and the condition of mineral deposits are peculiar in each arc. Generally speaking, mineral veins are mostly met with in the region of the Inner Arc and in eruptive rocks or strata intersected by

Inner Arc.

Mineral Deposits in the Two Arcs.

such; while metal-bearing strata are greater in sedimentary formations found in the Outer Arc. In Formosa the Outer Arc faces the east and its formation is comparatively symmetrical. The formation at its northern part is exceedingly complicated owing to the presence of a big dislocation which geologically intersects it from Okinawa. It is in this northern district that many mineral veins are found.

Metal-Bearing Strata.—Some metal-beds are found in a highly developed form at the water level of certain strata. Thus copper bearing iron pyrites beds are markedly developed in the crystalline schist and the Chichibu systems, while iron-bearing beds are especially rich in the Chichibu system. Beds of the former description are widely distributed, being found in the province of Totōmi, Kii, Awa, Iyo, Hyūga and Higo. The Hibira and Makimine copper mines of Hyūga and the Itsuki copper mine of Higo are the principal copper deposits present in the Chichibu system. Similarly the principal copper mines belonging to the crystalline schist system are Higashiyama of Awa, Besshi of Iyo, and Kune of Totōmi.

Copper.

Iron-bearing beds exist principally in the form of either magnetic iron or mica-iron and are found somewhat transformed by the action of granite and calcareouse rocks, with both of which the beds are generally found. The principal iron mines are those of Kamaishi and Sen-nin in Rikuchu, Akadani in Echigo, Nakakozaka in Kōzuke, etc.

Iron.

Manganese. Manganese-beds generally exist in the Mesozoic system in the shape of rounded nodules.

Metallic-Veins.—Metal-bearing beds forming veins generally exist either in eruptive rocks or the Tertiary formation. They are also found to some extent in Palaeozoic rocks.

Mines Working Veins.—The principal mines which are working the veins are as follows:—

Auriferous mines:—Hashidate in Echigo, Yamagano in Satsuma, Zuihō and Kinkwaseki in Formosa.

Gold-silver mines:—Aikawa in Sado, Ikuno in Tajima, Innai in Ugo, Ponshikaribetsu in Hokkaidō.

Copper mines:—Ashio in Shimozuke, Osaruzawa, Ani and Arakawa in Ugo, Okoya in Koga, Obiye in Bitchu.

Lead mines :—Hosokura in Rikuzen, Kamioka in Hida.

Antimony mines :—Ichinokawa in Iyo.

Tin mines :—Taniyama in Satsuma.

Of the metal mines existing in Japan, copper mines are the richest, the discovery of new copper veins being not unfrequent even at present. The copper ores of Japan are peculiar in containing more or less of gold or silver or both.

Impregnations.—Of the metalliferous deposits, those forming impregnations are especially found in the north of the Inner Arc. At the Kosaka mine in Rikuchū, which has recently raised itself high in the list of copper-silver mines of Japan from its obscure position of a worked-out silver mine, ore deposits impregnating Tertiary tuff, locally known as "Kuromono" (black ores), are being mined.

Non-Metallic Deposits.—The principal non-metallic deposits in Japan are coal and petroleum. These, as distinguished from metal-bearing strata, are generally developed in the Inner Arc region which comparatively abounds in the Tertiary system, instead of, like the metal strata, in the Outer Arc districts. In Formosa, however, the coal-bearing beds are found in the Tertiary formation existing in the Outer Arc region.

Coal.—The coal existing in Japan is generally bituminous. The greater part of the seams occur in the Tertiary system, none of them in the Carboniferous system. It may be conjectured that the strata belonging to this system were then formed beneath the ocean, and no vegetation existed to supply material for the formation of a coal-bed.

Anthracite Coal-Fields. The coal-bearing strata existing in the rocks of the Mesozoic era are the anthracite coal-fields found in the provinces of Nagato, Kii and Higo, but they are comparatively indignificant.

Bituminous Coal-Fields.

It is in the younger Tertiary formation that the coal seams of Japan show a marked development. The principal coal-fields belonging to this class are those in Kyūshu and Hokkaidō, and also those in the Hitachi-Iwaki (Joban) districts.

The Kyūshu coal-fields comprise the extensive coal-strata of Chiku-hō, (two provinces of Chikuzen and Buzen), Miike, and Hizen.

Below will be described briefly the principal coal-measures in Japan.

(A). THE HOKKAIDŌ COAL-FIELDS.

ISHIKARI COAL-MEASURES.

The Sorachi coal-field was the one first discovered among the coal-measures of Ishikari. In the travelling memorandum of Matsuura who undertook an extensive exploration of Hokkaidō and other northern regions about 1855, the discovery of a coal outcrop on the banks of the river Sorachi is mentioned. About three years later, another man named Kimura discovered the outcrop of coal at Poronai while he was engaged in felling timbers. But it was by an American named Mr. Lyman that a definite survey was first undertaken. About 1876 the Hokkaidō Board of Colonization entrusted that gentleman with the work of surveying the coal-fields of Sorachi, Poronai and vicinities. The report submitted by Mr. Lyman declared the presence of coal-fields in the district of Yubari. In 1879 the work of boring an adit at Poronai was started, but it was not till the fall of 1883 that extraction was regularly commenced. From that time till 1890 the Government worked the mine on its own account, but on the creation in that year of the Hokkaidō Tankō Tetsudō Kaisha (Hokkaidō Colliery Railroad Joint Stock Company), the three measures of Sorachi, Ikushumbetsu and Yubari were sold to that establishment. Since then the company has been working those mines on an expanded scale.

Situation. The coal-fields of Ishikari extend over the two districts of Yubari and Sorachi of the province of Ishikari, Hokkaidō.

Seams and Quality of Coal. In these coal measures the seams contained in the Yubari measures are the most extensive. The seams are three in number, one of which measures, including parting, 6 to 3 feet and 25 feet. At the depth of 300 feet below these seams occurs another measuring 4 feet in thickness. These seams extend 25,000 feet in length, dipping at an angle of from 15 to 20 degrees. The coal-bearing strata of the Sorachi measures dip with suddenness, at 30°—80° angles, and they contain 13 seams each measuring over three feet

in thickness. At present the tenth seam is being worked. The coal-bearing strata at Poronai dip, in the north-western part of the measures, at an angle of from 18 to 40 degrees, though at the south-eastern part the dipping generally makes 50° to 80° angles. Over 20 seams of various thinkness occur, but of these only five are workable. The quality of all those measures is excellent, the product at Yubari and Sorachi being specially suited for making gas or coke.

The Condition of Mining.

The coal-fields are worked almost exclusively by the Hokkaidō Tankō Tetsudō Kaisha, with only a single exception in the neighborhood of this company's concession at Yubari, where in 1903 the working of another concession was commenced by a different establishment. The company is working the fields at Yubari, Sorachi, Poronai and Ikushumbetsu. In the first three mines a compressed air plant is set to supply motor to pumps, coal-breaking machines, ventilators and elevators, and also for locomotives. Electric generators are also on duty to work ventilators, screeners, various machines in the workshops, and also for illumination.

At present the Yubari mine employs about 4,000 men, producing on an average about 1,500 tons in a day. But at Sorachi and Poronai about 2,000 men are at work producing about 500 to 600 tons. The company's roalroads connect the pits of all the mines worked by it with the exporting ports of Otaru and Muroran, while four steamers belonging to the company ship the coal to markets both at home and abroad.

(B). THE CHIKU-HŌ COAL-FIELDS.

The Chiku-hō coal-fields produce more than one half of the whole output in Japan, and possess, interlaid between sandstones, shale and conglomerate, a large number of seams of which more than ten are workable. The coals from these seams are of medium quality and bituminous. The penetration of the veins or deposits of volcanic rocks through the seams metamorphoses the coals to natural coke in some places.

Though the date of discovery is not exactly known, evidences go to prove that several beds in this rich coal region must have been exploited more than two centuries ago, while coming to the

middle of the 19th century the coal was shipped to markets situated in adjoining districts. In those days the work was confined to surface seams, and it was not till 1881 when a steam boiler was set at the Meo mine (now forming part of the Katsuno mine), that the extraction in modern style was introduced in this coal region. After that similar appliances were adopted at other mines as Namazuda, Shin-nyū, Meiji, Akaike, etc. About 1889 the reserved beds for use of the Navy at Togawa, Kurate and other places were opened for public exploitation, while about that time the Department of Agriculture and Commerce adopted legislative measures aimed at discouraging the separate existence of small concessions, hence at encouraging their combination. Meanwhile the work of laying railroads through the important districts of Kyūshu advanced apace, by which the facilities of transportation between the coal mines and the harbors of Moji and Wakamatsu were considerably promoted. But what specially stimulated the development of the colliery work in Kyūshu was an extraordinary demand for coal occasioned by the Japan-China War. All those circumstances have combined to carry the work of the Chiku-hō coal-fields to the present state of prosperity.

Locality.

The Chiku-hō coal-fields extend for the five administrative districts of Tagawa, Kurate, Kaho, Onga, Kasuya, all in Fukuoka-ken, and measuring over 30 miles north and south and 8 to 16 miles east to west.

Seams and Quality.

The coal-bearing strata in the Chiku-hō coal-fields may be divided into upper and lower strata as to quality of coal contained. The coal obtained from the upper seams is inferior in quality but possesses advantages of being easily workable. The principal seams are five in number with the thickness generally varying from 2 to 6 feet. In proportion, the area occupied by the upper strata does not exceed one-fifth of that of the lower strata.

(C.) THE MIIKE COAL-FIELDS.

The discovery of the fields date more than four centuries ago. From 1873 to 1889 the colliery belonged to the Government, but it was subsequent to the latter year, when the Mitsui Firm got the concession, that the work of the colliery began to present a marked activity.

Locality, Area, etc.

The fields cover 3½ miles east and west and 10 miles north and south, occupying a seaward proportion of Miike district in Fukuoka prefecture and Tamana district in Kumamoto prefecture. The area occupied measures 13,969 acres, while the output in 1902 amounted to 962,091 tons, the aggregate during the thirty years beginning 1873 being 11,737,931 tons.

Seams and Coal.

Several seams occur, but at present the first seam alone is almost exclusively worked. It measures 5 to 25 feet with an average thickness of 8 feet. The seam dips in general with an angle of 5½ degrees. The second seam lying at the depth of 6 to 10 feet under the first possesses the thickness of 5 feet, but this seam is only partially distributed through the fields. The other seams are very irregular in formation and are hardly workable.

The coal, as already stated above, is excellent, being especially suited for making gas and coke and for use in boilers.

The Existing Condition.

The work is carried on at six different places in the colliery, each separated from the other by a natural partition or brick-wall, the largest pit is that called Manda. Its mouth measures 12 feet by 41 feet and the pit reaches the depth of 826 feet. When all the arrangements now going on for conducting work more efficiently than at present have been completed, this pit alone is expected to yield more than 2,000 tons per day.

The pumping appliance at the colliery in on a large scale, the water issuing at the pits averaging 1,200 cubic feet per minute on ordinary days and 2,000 in the time of the rainy season. Seventy-seven pumps are at work, requiring a motor of 15,254 horse-power.

The pumping plant installed on the pit bank at the Manda mine, for instance, has a high-pressure steam cylinder 45 inches in diameter, low-pressure steam cylinder 90 inches in diameter, a water cylinder 22 inches in diameter, and all of 12 feet stroke; and is able to deliver water against a head of 900 feet lifted in three stages of 300 feet each. It is described in the Encyclopædia Britannica as "probably the heaviest existing colliery pumping plant" in existence.

At present 2,008 mine-workers and 3,660 workpeople of other

descriptions are employed, the daily output being 3,050 tons. Arrangements for transportation exist in good order, 16 inches of railroad for express purpose of conveying the coal from the colliery to the nearest shore being in operation, while at the shore a ship, a wharf and a big crane are provided. A ship can admit 80 colliers of from 50 to 300 tons. At present 4,000 tons can be coaled in 24 hours. All these facilities of transportation will become far more satisfactory when, with the completion of the improved working arrangements at Manda, a more capacious ship and an additional railroad have been constructed, this work of construction going on at present.

(D.) THE TAKASHIMA COAL-FIELDS.

The date of the discovery of this coal-field is not exactly known, though some evidences exist that the extraction must have been made about two hundred years ago. In 1817 the mine came into the possession of the then chief of the Saga clans and it was during the ownership of this clan, or more precisely in 1867, that a shaft after a European fashion was first sunk. Six years later the ownership passed to the Imperial Government, next year to the late Count Goto, and in 1881 to the Mitsubishi Firm, in whose hands it still remains. Considerable improvement both in the method and scope of working has been effected by that establishment. At one time the daily output exceeded 1,200 tons, and though for a while afterward the output gradually declined, it somewhat revived its former activity when in 1898 new seams were discovered.

At Hajima, one of the three collieries collectively called the Takashima coal-field, a regular shaft was first sunk in 1887, and when in 1890 it came to the possession of the Mitsubishi Firm the second and third shafts were sunk, and these only are now worked, as the work in the first shaft had to be abandoned as a result of a fire that occurred in it in 1897.

Seams and Quality.

The seams at the Takashima mines generally run north-north-east to south-south-west, the dip being from 20 to 20 degrees at the north-eastern part and from 30 to 50 at the south-western part. There are sixteen seams, of which five are workable.

The directions of the seams at Hajima are on the whole similar to those at Takashima, only the dip is somewhat sharper, making as much as 60 or 70 degrees at the south-western part. There are thirteen seams, of which six are workable. The seams in the two mines exist in identical strata and their workable seams alone measure on an aggregate over forty feet deep, holding, roughly estimated, 160 million tons. The quality of the cool ranks best of all the produce in Japan, being especially suited for making coke.

The Condition of Work.

The working galleries of the mines are in most cases situated under the sea-bed, some of them lying 1,630 feet below the surface of the sea. This requires constant ventilation and the ventilator set at Takashima ventilates on an average 58,000 cubic feet of air every second and that at Hajima 120,000 feet. At present about 3,000 men are at work producing 16,100 tons a month on an average.

Locality, Area, etc.

The coal-field is situated in the Nishi Hikine district in Nagasaki prefecture and comprises the three small islands named Takashima, Hajima and Nakanoshima lying seven nautical miles from the harbor of Nagasaki. It covers 2,430 acres. In 1902 the output amounted to 189,135 tons. During the 22nd years beginning 1881, when the concession came into the possession of the present leasee, the colliery produced 4,889,567 tons.

PETROLEUM.—Petroleum exist almost exclusively in the Tertiary formations found in the Inner Arc region. It is generally contained in the coarse sandstones interlaid between the layers of impervious shale. The oil-bearing area is very extensive, stretching over Hokkaidō, O-U districts, and the provinces of Echigo, Shinano, and Totōmi. The oil-field of Totōmi existing in the Tertiary system of the Outer Arc region, is comparatively insignificant.

Distribution of the Veins.

The principal centre of production is Echigo which contains the five principal oil-fields of Higashiyama, Nishiyama, Amaze, Niitsu, and Kubiki, of which the first two are the most important. The Higashiyama oil-field consists of white sandstone and the strata are generally found from 60 to 960 feet below ground. The Amaze oil-field is in alternate

Echigo Oil-Fields.

layers of shale and sandstone, and some of the strata lie about 2,562 feet deep. Though the output has somewhat declined, the quality of the oil from this field is the best of all.

The Nishiyama oil-field, though on the whole similar in geological formation to the strata of Amaze, produces oil of inferior quality, and generally lies about 600 feet deep in the ground.

PRINCIPAL PETROLEUM VEINS IN ECHIGO.—Strictly speaking, it was in the 7th year of the reign of the Emperor Tenchi (668 A.D.) that the first authentic record about the petroleum-fields of Echigo occurs. That record states that in that year "burning earth" and "burning water" were presented from Echigo to the Imperial Court. Though the boring became somewhat active toward the end of the 15th century to the middle of the 16th, still it was not till about 1875 that the business began to acquire some commercial importance. The work was mostly carried on at that time in the districts of Kubiki and Niitsu. With the tapping of the veins at Amaze about ten years afterward, and especially after the work undertaken by the Japan Petroleum Company with regular boring machinery in 1890 had been crowned with success, that something like a boom overtook the petroleum industry of Echigo. The veins at Hire and Urase began to yield oil, while in 1898 the machine boring at Nagamine and the following year at Kamada struck rich beds of oil. From that time till 1902, boring was successfully tried in several other places of Echigo.

General Remarks.

At present the principal oil-fields in Echigo are Nagamine, Kamada, and Niitsu. The first is worked by two companies and in 1902 produced 340,000 barrels, more than one-third of the total output in Japan. The crude oil is transported by iron-pipes to a refinery at Amaze separated by over 9 miles from Nagamine, and also to a refinery at Kashiwazaki separated by 11 miles. The later belongs to the Japan Petroleum Company and is perfect in arrangement. It may indeed be regarded as a model oil-refinery in Japan.

Nagamine.

The oil-fields at Kumada are exploited by the International Oil Company and an individual concessionaire, and gave 120,000 barrels in 1902. The company possesses

Kamada.

at Naoyetsu, a place separated by 29 miles, a refinery worked on a large scale.

Niitsu. The oil-fields at Niitsu were originally divided into a large number of concessions worked on a small scale, but they have subsequently been amalgamated for the most part, with excellent results as to yield. In 1902 this reached 186,000 barrels.

Higashiyama Oil-Fields. Hire, Urase, Katsuhosawa, and Tsubakisawa are collectively called the Higashiyama Oil-fields which in 1902 produced 265,000 barrels. A number of refineries for refining the Higashiyama oil are at work at Nagaoka, a place lying 6 miles from the fields.

The Kushiike oil-fields are the newest beds, having struck oil in 1901. The next year the output reached over 28,000 barrels.

Graphite.—Graphite ores occur in Japan either in schistose rocks in which case they exist in laminae or in masses in stratified rocks. Though very widely distributed, this mineral is still left comparatively neglected.

Sulphur.—Being a volcanic country, Japan is very rich in sulphur, which occurs very frequently in extensive deposits. The principal sulphur mines are Tsurugizan in Rikuchu and Iwaonobori and Rausu in Hokkaidō.

Alluvial Deposits.—Alluvial deposits in Japan are represented by alluvial gold in the district of Esashi in Hokkaidō and iron sand in Chūgoku. The former is detached from auriferous quartz rocks belonging to the Mesozoic period and deposited in the river-beds, while the later originates from the decomposition of granite magnetic iron. Alluvial gold deposits are also found along the eastern districts of Formosa.

Peculiar Development of Japanese Mineral Ores.—As described in the foregoing paragraphs, mineral ores in Japan, excepting metallic ores, are generally well developed in those districts lying along the Inner Arc. It is very much to be regretted that, owing to the peculiar geological formation of the country, the Carboniferous system of Japan is conspicious by the absence of coal. However, the comparative abundance of the Tertiary and younger eruptive rocks affords some consolation, as this gives hope

of discovery in future of various mineral deposits. In short, the close relation existing between mineral deposits and an exceedingly complicated geological formation of the Inner Arc region must not be overlooked in investigating the mineral recources of Japan.

III. MINING AND METALLURGY.

General Remarks.—As the methods of mining and metallurgy were in a rudimentary stage before the Restoration and as experience or what would be called, in more familiar language "the rule of thumb" was the sole guidance, it is no exaggeration to say that the mining as it is carried on to-day is a complete transformation to what was forty years ago. Moreover, as all the processes of mining, milling and metallurgy were practically conducted by hands, the scope of business was necessarily limited and the output was therefore small, not to speak of the waste of metal. In justice of our old miners, it ought to be added that with no accurate scientific knowledge and labor-saving appliances to assist their work, they developed, especially in the metallurgy of copper, lead and gold and silver ores, a method highly creditable to their ingenuity.

Introduction of Explosives.

The Restoration inaugurated an important epoch in the annals of the mining industry in this country. In the year 1867, an Englishman named Erasmus Gower introduced for the first time in this country the use of explosives which he employed in the silver-gold mine in Sado, while an American expert named Pumpelly also used an explosive at the Yurap lead mine in Hokkaidō. These are the first instances of the employment of explosives in the mining business in this country. In 1868, Kanso Nabeshima, then the feudal lord of Saga, in conjunction with Mr. Glover, an Englishman, sunk a European shaft at Takashima. This was the first shaft ever sunk in Japan.

Mining work by Government.

On the advent of the Meji era, the Government undertook the mining business itself and placed the Sado, Ikuno, In-nai, Ani, Kosaka, Kamaishi, and Okuzu metal mines as well as the Takashima and Miike collieries under its direct control, between 1868 and 1884. It engaged as

many as 80 foreign experts for those mines, and improvements were zealously effected in various directions. In mining, smelting, and transportation, an example was set to private mining companies of adopting foreign systems. At the same time, that is in 1871, an engineering school was established for diffusing a knowldge of mining and metallurgy. The result was a remarkable advance in these departments of scientific learning.

A large number of private operators profited themselves with the example thus set by the Government, and started mining enterprises on an improve style, and though their undertakings were not always successful, the result was on the whole a remarkable development of the industry. The mining industry now fairly launched and there was little or no necessity for retaining the model mines; at least the Government seems to have taken this view of the matter, for it soon opened the mines under their control to private enterprise.

Especially was the rise of the work of coal-mining noteworthy about this time. And in this Hokkaidō first set an example to the other parts of the country, the coal industry in that northern island dating from 1885. Then followed the exploitation of the coal-fields in the Chiku-hō districts, but it was not till the Japanese coal first began to go abroad, in 1889, that the colliery-work made any striking development. To give some idea of this remark, it may be stated that, whereas 28 years ago Japan had only one colliery employing steam-engines and that her output of this fuel was only about 200,000 tons in a year, to-day engines aggregating over 36,700 horse-powers are at work with the output reaching over 10,000,000 tons. As to demands abroad of Japanese coal, the markets along the coast of China east of Singapore are practically held by it.

Progress of Coal-Mining.

The petroleum industry is another mining business that has lately sprung into great importance. An object of curiosity known from olden time under the name of "burning-water," it was first turned in 1890 to real commercial use by tapping the subterranean reservoirs with drill-machines of American style. The success of this innovation has given a powerful impetus to the development of the petroleum industry, and something like a

Progress of Petroleum-Mining.

petroleum boom came over Echigo. To show briefly this state of things by figures, the output of crude oil that did not exceed 80,000 barrels eleven years ago with the conducting iron-pipes extending less than 3 miles altogether, to-day the figures stand at 1,100,000 barrels and 186 miles respectively.

Iron Foundry Work.

Iron foundry work was carried on from olden days in the provinces of Hōki, Izumo, and some others, the river iron coming from decomposed granite having been used for this purpose. The output of iron was necessarily limited. Eleven years ago the Government was impressed with the necessity of starting the foundry business modelled on a Western style, and an Imperial commission was appointed to institute thorough inquiries into all matters pertaining to this new enterprise. The result of these inquiries was the establishment in 1896 of the Imperial Iron Works at Yawata, Kyūshu. The working programme has not being complete yet in all its details, the quantity of iron produced at the works is still comparatively small though sure to become considerably increased at no distant time. A private iron work at the Kama-ishi iron-mine is also producing more or less iron.

Precious Metal Mining.

In the mining of precious metals, the output of silver reached a large amount at one time owing to a highly creditable progress which our miners attained in a process of smelting. It necessarily declined six or seven years since, owing to the universal fall in the silver market. On the other hand, as a result of the discovery of alluvial gold deposits in Hokkaidō and the adoption of an improved method of smelting in the gold mines of Kagoshima, Ōsumi and other provinces, the advance of the output has been carried to an almost unprecedented extent.

Copper Mining.

As to the mining of copper, which occupies such an important place in our mining industry, the output is advancing at a rapid rate, the ores being found almost everywhere throughout the country, while the processes of milling and smelting are being markedly improved and on a larger scale.

Output of principal mines.—In 1902 the principal mines

existing in Japan, with their output, are as follows. Those only are given which, in the case of gold-mines, produce not less than 2,000 ounces; 50,000 ounces in the case of silver-mines, 500 tons in copper-mines, 500 tons in lead-mines, 10,000 tons in iron-mines, 100 tons in antimony-mines, 1,000 tons in manganese-mines and sulphur-mines, 100,000 tons in coal-mines, and 10,000 barrels in petroleum concessions. The output of any single product at Omori, Omotani, Dogamaru, Hosokura and Kune mines does not reach that the respective standard, but they are mentioned here because the output of all the minerals produced by them combinedly reach that standard.)

PRINCIPAL MINES AND OUTPUT (1902).

TABLE I.

Name of Locality.	Name of Mine.	Gold (oz.)	Silver (oz.)	Copper (ton).	Lead (ton)
Niigata	Sado	12,574	123,660	—	—
Kagoshima ...	Ushio	11,925	—	—	—
Hyōgo	Ikuno	6,814	167,167	447	—
Niigata	Hashidate	6,696	—	—	—
Hokkaidō ...	Shin-Totsugawa ...	6,616 (alluvial gold)		—	—
Kagoshima ...	Oguchi	4,628	—	—	—
Hokkaidō ...	Usotannai	4,074 (alluvial gold)		—	—
Kagoshima ...	Yamagano	9,407	—	—	—
Ishikawa... ...	Kuratani	2,196	35,756		114
Hokkaidō ...	Peichan...	2,196	—	—	—
Akita	Innai	2,199	261,737	—	—
Gifu...	Kamioka	—	132,194	—	804
Akita	Tsubaki...	—	111,612	—	—
Hokkaidō ...	Ponshikaribetsu ...	909	101,039	—	—
Eukushima ...	Handa	675	58,880	—	—
Shimane... ...	*Omori	684	30,830	62	—
Tochiki	Ashio	—	—	6,762	—
Ehime	Besshi	—	—	4,739	—
Akita	Kosaka	—	96,087	3,050	—
Miyazaki... ...	Hibira	—	—	876	—
Akita	Osaruzawa	—	—	816	—
„	Ani...	—	—	815	—
„	Arakawa	—	—	918	—
Miyazaki... ...	Makimine	—	—	751	—

Name of Locality.	Name of Mine.	Gold (oz.)	Silver (oz.)	Copper (ton).	Lead (ton)
Okayama... ...	Obiye	—	—	567	—
„	Yoshioka	—	51,175	529	—
Niigata	Kusakura	—	—	515	—
Akita	Himiichi	—	20,009	498	—
Gifu...	Hirakane	—	41,590	472	—
Ishikawa... ...	Okaya	—	—	451	—
Kumamoto ...	Goki	—	—	374	—
Fukui	Omotani	—	—	267	—
Shimane	*Dogamaru	—	—	253	—
Shizuoka... ...	*Kune	—	—	10,599(copper ore)	
Miyagi	*Hosokura	—	28,394	—	318

TABLE II.

Name of Mine.	Name of Locality.	Iron (ton).	Antimony. (ton).	Manganese (ton).
Kamaishi	Iwate	20,060	—	—
Ichinokawa	Ehime...	—	513 (refined)	—
		—	51 (sulphate)	—
Kano	Yamaguchi...	—	208	—
Minika	Hokkaidō	—	—	1,953
Iwasaki	Aomori	—	—	1,503

TABLE III. (Coal.)

Name of Colliery.	Name of Locality.	Output (ton).
Miike	Fukuoka	962,091
Onoura...	„	458,360
Yubari	Hokkaidō	425,945
Meiji	Fukuoka	420,695
Shin-nyu	„	353,821
Komatsu	„	301,952
Katsuno	„	301,050
Otsuji	„	240,721
Futase...	„	220,971
Tagawa	„	218,157
Sorachi	Hokkaidō	206,969
Namazuda	Fukuoka	204,902
Poronai	Hokkaidō	194,886
Takashima	Nagasaki	189,135
Akaike...	Fukuoka	155,936
Akasakakuchi	Saga	146,790

Name of Colliery.	Name of Locality.	Output (ton).
Mitaku (for admiralty)	„	146,187
Iriyama	Fukushima	144,636
Ito	Fukuoka	143,138
Naigo	Fukushima	133,283
Yamano	Fukuoka	130,806
Kanada	„	130,687
Yoshinotani	Saga	129,109
Hokoku	Fukuoka	128,983
Onoda	Fukushima	120,192
Kinejima	Saga	117,938
Iwasaki	Fukuoka	105,648
Tadakuma	„	102,452

TABLE IV. (Petroleum.)

Name of Oil-District.	Name of Locality.	Output (barrel).
Nagamine	Niigata	340,401
Niitsu	„	186,439
Kamada	„	120,782
Hire	„	94,568
Urase	„	84,862
Katsuhozawa	„	68,123
Kushiji	„	28,281
Tsubakizawa	„	16,969

TABLE V. (Sulphur.)

Name of Mine.	Name of Locality.	Output (ton).
Iwaonobori	Hokkaidō	2,696
Koruni	„	2,018
Tsurugisan	Iwate	1,815
Kiritomehira	Akita	1,658
Shirikishinai	Hokkaidō	1,613
Rausu	„	1,012

IV. CONDITION OF MINE-WORKERS.

LABOR AND LIFE OF MINE-WORKERS.—The total number of

persons employed in Japanese mines was 150,169 in June, 1902. These include miners, carriers, pickers, smelting men, machine tenders, iron workers, and pumpmen. Most of these laborers work underground and under uncomfortable circumstances, but in spite of these disadvantages they are generally satisfied with their lot and go to work with light hearts. Some of those workers are natives of the district in which the mine is stiuate but the greater numbers of them are from other provinces, no small number of whom settle down, form families, and live till their death. These mine-workers generally live in dwellings provided by their employers; those with families in separate rooms and those without families in large common rooms. The dwellings are either thatched or tile-roofed, and the inside of the rooms is comparatively clean, which reflects much credit on them. When mines are remote, provisions are supplied by the mine operators, sometimes at a very low price. Evidently this institution of a cheap supply of food is adopted with a view to checking any movement for the rise of wages on the pretext of a rise in the price of commodities, for it is very difficult to lower wages when once they are raised.

As their calling is attended with some peril, their wages are on a higher scale than those of their confrères in the other walks of life, as shown in the table given below.

Protection Given by Employers.

In consideration of great risk to which they are exposed, their employers are bound to take care of them, when they meet with accidents while on duty. The employers bear part or the whole of expenses of medical attendance, and, when the patients are treated in hospitals other than those owned by the employers, they are daily paid a sum of money to meet the expenses of such hospitals. In case of their being disabled, they are given a fair amount of money, and in case of death, generally a sum of five *yen* or upwards is granted to the bereaved families toward the funeral expenses, besides giving some allowance to the families. The following table shows the sums paid, during the three years specified, by some of the mine-owners, under the circumstances already given:—

FUNERAL EXPENSES.

Year.	Miike.		Besshi.		Ikuno.		Innai.	
	No. of Recipients.	Amount in *yen.*	No. of Recipients.	Amount in *yen.*	No. of Recipients.	Amount in *yen.*	No. of Recipients.	Amount in *yen.*
1899.....	15	73.000	2	24.000	45	251.000	2	9.000
1900.....	9	45.000	10	80.000	39	197.500	3	15.000
1901.....	25	125.000	5	41.942	42	166.500	2	10.000

MONEY GIVEN IN AID OF THE BEREAVED FAMILIES.

1899.....	14	560.000	—	—	138	796.100	2	29.000
1900.....	9	360.000	—	—	164	957.800	3	67.200
1901.....	21	820.000	2	40.000	185	1,096.800	2	54.830

MONEY GIVEN IN RELIEF OF THE DISABLED.

1899.....	8	100.000	—	—	42	871.500	—	—
1900.....	13	135.000	—	—	49	1,043.000	—	—
1901.....	2	60.000	—	—	50	1,143.000	1	14.440

FUNERAL EXPENSES.

Year.	Kamaishi.		Ashio.		Sado.		Yūbari, Poronai, Ikushumbetsu, Sorachi, etc.	
	No. of Recipients.	Amount in *yen.*	No. of Recipients.	Amount in *yen.*	No. of Recipients.	Amount in *yen.*	No. of Recipients.	Amount in *yen.*
1899.....	—	—	7	58.000	5	24.000	33	330.000
1900.....	14	70.000	16	119.000	1	5.000	21	210.000
1901.....	6	39.950	15	127.000	1	5.000	40	400.000

MONEY GIVEN IN AID OF THE BEREAVED FAMILIES.

1899.....	—	—	6	100.000	4	150.000	29	890.000
1900.....	13	148.000	15	355.000	1	30.000	21	840.000
1901.....	7	140.000	16	330.000	—	—	32	1,480.000

MONEY GIVEN IN RELIEF OF THE DISABLED.

1899.....	—	—	3	60.000	—	—	21	708.000
1900.....	—	—	2	50.000	—	—	13	387.000
1901.....	2	108.970	3	53.000	—	—	16	398.000

In respectable mines, mine-workers' mutual aid associations are in existence. The aim of these associations is to extend help to the members in case of emergency. To this end, reserve funds are created by contribution from the members, and also from the mine operators or other patrons, and disbursements are made from these funds in case of the injury, illness, or death of any of the members. The sums to be contributed by the mine-workers vary according to different associations. In some cases, a certain fixed sum is contributed uniformly by all, while in other cases, sums are contributed in proportion to the positions of the workmen. Such contributions are made every month out of their income. In granting the relief, the amount to be given is fixed, other things being equal, according to the length of time the party to be relieved has been a member of the association, or according to the position of the recipient, or according to both.

Mine-workers' Mutual Aid.

Education of mine-workers.—Although in petty mines where only a small number of workmen are employed no provision is made for the education of the miners' children, in larger mines they are educated either in schools established by the mine-owners or in public schools subsidized by the mine-owners. Under such circumstance, the rate of tuition fee is comparatively low.

As to the workers themselves, working as they do underground they apparently look to be of fierce and vicious characters. However they are on the whole meek and obedient. But among those who are termed itinerant miners, who are constantly moving from mine to mine, there are occasionally found blood-thirsty rogues and ruffians.

Peculiar usage exists among miners. The oaths of chiefs and protégés and of bretheren are observed with religious strictness. The instructions of the "boss" are expected to be obeyed whether they are right or wrong. These chiefs are in intimate communication with each other, so that in case a miner goes from one mine to another, seeking employment, etc., he is sure, if he gives the name of his chief, to be kindly treated. His new friends will go to no little trouble to find employment for him and will often give him money

Miners' "Boss."

to cover his travelling expenses. This peculiar spirit of fraternity is utilized for the control of miners; and it is difficult for the outsider to realize how implicitly the commands of these chiefs are obeyed and how well order is preserved. But this sympathy between the chief and the followers sometimes aggravates a fight between chiefs themselves and often brings about tragic incidents. Sometimes these retainers of a "boss" cause trouble to the latter's employers. Under such circumstances, one would suppose that strikes must be of frequent occurrence. This is not the case, however. Indeed strikes of miners are almost unheard of, although quarrels among them are very common. This absence of strikes may generally be ascribed to the kind treatment of miners.

V. LEGISLATION.

In describing the legislative measures and administration as, enforced in Japan about mining, the first thing that demands attention is the right of ownership.

Right of Ownership.—There are, generally speaking, three kinds of right of ownership as to mines, these being the system of accession, that is to say, the system of ownership by private individuals; (2) the domanical system, that is to say, the system of State ownership; (3) the system of concession, that is to say the system of giving concession on application.

Japan has never adopted the first system; it adhered to the State ownership system from former times and till quite recently, so that when the privilege of working a mine was granted to any private people, this concession was regared as favor of the Government, and for a certain limited period in return for payment of royalty. That period as mentioned in the Mining Regulations issued in 1873 was 15 years.

Original System in Japan.

The progress of the times did not allow the continuation of such arbitrary system, which was moreover calculated to seriously impair the advance of the mining industry. In 1890 the said Regulations were amended, and with the opera-

Present System.

tion of the new Regulations two years later the concession system distinctly establishing the right of permanent working was inaugurated, and thus safeguarded the sound development of the mining industry in Japan.

Scope of Mining Work and Kinds of Mines.—In the 1st article of the Regulations it is provided that mining work means trial boring and all works pertaining to it. The inclusion of the work of smelting and so forth to mining work proper is a distinct feature of mining administration of Japan. It is a result of long-established usage and is also due to some extent to the convenience it affords to Government over-seers, for boring and smelting have in most cases been combined in Japan and the division of the two was therefore judged troublesome. Moreover the bringing of trial boring and smelting under the same treatment as mining were judged to tend to encouraging the mining industry.

Mineral ores as recognized in law are as follows:—

Gold (alluvial-gold excluded), silver, copper, lead, tin (tin-sand excluded), antimony, quicksilver, zinc, iron, (iron-sand excluded) hematite, manganese, arsenic, plumbago, coals, petrolemn, sulphur, bismuth, *cloral-iron*, phosphorus, peat, and asphalt. The last five were added to the list in 1900.

Qualification of Mining Concessionaires. — At first a foreigner was disqualified from working a mine and was further prevented from becoming a member of a mining establishment, so that the right of working mines was exclusively reserved for Japanese subjects. In consequence of the amendment of the Mining Regulations in 1900 a business establishment organized by Japanese or foreigners or by both combined is allowed to work mines, provided such establishment is placed under Japanese laws. This amendment besides confering a great benefit on foreigners and encouraging the creation of mining establishments organized by foreigners, has proved a means of stimulating the development of the industry.

Privilege of Foreigners.

Trial Boring and Working.—Differing from the examples seen in many Western countries, Japanese law does not recognize in the matter of trial extraction the right of priority of discoveries; the right of trial boring is granted to the one who has first

Right of Priority. applied for it. The reason why this system has been adopted in Japan is because the fact of an alleged discovery is exceedingly difficult to verify, while an accidental discovery has no right to claim any special privilege. The concession of trial boring carries with it a great privilege in Japan for no other person is allowed to apply for the trial boring in the concession conceded to the first applicant of the same metal as that for which the concession was made to that applicant (art. XXI).

The non-recognition of the right of priority of the owner of land in which a discovery is made is derived from the foundamental principle of Japanese legislature, and must be regarded as a highly reasonable provision. The period of trial boring is one year, to be extended to another year when such extension is regarded proper and necessary (Art. IX.). In contrast to this limitation in the period of the trial borings, no such limit is enforced in regard to permanent working. Further, though the right of trial boring can not be transferred to a third person or be used as object of hypothecation, the right of permanent boring can be sold or bought or assigned or be made an object of hypothecation (Art XX.)

The fact that the concession of working a mine was at first limited to the space of only 15 years, and that this concession was forbidden from being made use of as object of hypothecation did seriously interfere with the proper development of the industry. The subsequent amendment of the Regulations has removed those two grave defects and to-day concessionaires and capitalists are enabled to invest a large sum in the exploitation of mines.

Scope of a Mining Concession and Supervision of the Working.—The scope of a concession is fixed with a definite limit, it being not less than 10,000 *tsubo* for coal and not less than 3,000 *tsubo* for other kind of minerals (Art XLI.), the maximum limit being 600,000 in both cases. The two extremes have been so determined in order to prevent the appearance of too many small concessions on the one hand and the evil of monopoly on the other. However, in case of the combination of more than two concessions the maximum limit may exceed 600,000 *tsubo*.

In view of the fact that our mine-owners and people are too

apt to attend to their own immediate interests at the expense of the permanent interest of the mining industry as a national economy, and that not unfrequently they secure concessions merely with the object of selling them to other people, the Government has deemed it advisable to interfere more or less with the mining business. Thus a concessionaire is obliged to forward to the chief of the Mining Inspection Office in whose jurisdiction the concession is situated the working plan he has drawn up and to obtain for it the approval of the chief before proceeding to work the concession (Arts. XXVI and XXVII). Further, the concession may be revoked by the Minister of Agriculture and Commerce in case the working is suspended for more than a year (Art. XXIX), while he also requires the concessionaire to submit every six months the plan of the existing condition of the mine (Art. XXXI), and also requires him to get his approval whenever a concession is to be amalgamated with another or is to be split up (Art. XLVI). Lastly, when the location and shape of a concession as represented in the application is discovered to differ from the actual location and shape of the bed, the Minister may order the concessionaire to mark out his concession anew, on pain of revoking the concession if this order is not obeyed.

Provisions against Forestalling.

Use of Land.—The mining operation involving the use of the surface of land, the interest of a mining concessionaire is often found incompatible with that of the owner of the land. The only way to find a way out of this difficulty is to requisition for the benefit of the concessionaire so much land as is judged necessary for the conduct of his work and to give suitable compensation for this requisition to the owner of the land. It is to regulate these relations the exploitation of natural resource demands that a special chapter is devoted in the existing law to distinctly define the right of mining concessionaires and owners of land. According to the provisions therein contained, the owner of the land cannot refuse permitting to the concessionaire the use of his land required in the mining work, the land required being specified thus:—

Obligations of Owners of Land to Mining Concessionaires.

For the purpose of sinking shafts or boring pits.

For stowing ores, stones, and earth.

For constructing working paths, roads, railroads, tramways, canals, ditches or pools.

For constructing smelting workshops and other buildings, electric wires, iron-pipes or chains required in mining.

The owner of the land cannot refuse leasing to the mine-owner the land required for making the foregoing provision (Art. LXVII), and the mine-owner in return must give to the owner a suitable compensation by way of rent or damages or must deposit security against rent (Art. L). Further, the mine-owner is obliged, on the request being made by the owner of the land, to purchase the land used by him in mining work for not less than three years. All the disputes between the land-owner and the mine-owner may be submitted to the decision of the chief of the Mining Inspection Office, but when his decision is regarded unsatisfactory by the parties concerned an appeal may be made, in case of lease, to the Minister of Agriculture and Commerce, and to ordinary courts of law in case of other kinds of dispute.

Mining Police.—From the very nature of the work not only is the risk to life greater to those engaged in it than in ordinary work, but the work may also involve serious injuries to other parties, by causing, for instance, the depression of the surface level of the land situated in the vicinity of the mine or by causing noxious gas or poisonous matters to spread in the surrounding district. It being judged unadvisable to leave the control of all those matters to ordinary police who can not be properly qualified for the task, it is provided in Art. LVIII of the existing Mining Regulations that the following matters shall be attended to by the respective chiefs of the Mining Inspection Offices, subject to the supervision of the Minister of Agriculture and Commerce:—

Provission to Safeguard Public Safety.

Safety of architectural constructions both in the mine and in connection with mining.

Protection of the life and health of workmen.

Protection of the surface of land and of the public interests.

When any cause of danger or of injury to the public interests

in connection with mining is perceived by the chief, he is authorized to order the concessionaire to remove such cause, on pain of ordering the suspension of the work in case of his disobeying the order (Art. LIX), while the supervising authorities may themselves carry out the necessary preventive measures and cause the concessionaires to pay the expense involved in the work.

The Minister of Agriculture and Commerce has further enacted Rules relating to Mining Police, and enforces strict control over such matters as the use of explosives, arrangements for ventilation, subterranean works, construction of chimneys, boilers, milling-shops, smelting-shops etc., provisions against accident, etc. The Chief of the Mining Inspection Office sees to the faithful fulfilment of all the points specified in the Rules.

Protection of Mine-Workers.—In view of the great risk to life and health, special provisions besides those mentioned in the Police Rules are in force for extending protection to mine-workers and their families, these provisions being intended to enforce proper restriction as to the nature of the work, number of working-hours, relief in case of death or injuries sustained in the discharge of duty. Every concessionaire is accordingly ordered to draw up for use in his own particular concession rules relating to workmen, and to submit to it the draft for the approval of the Chief of the Mining Inspection Office (Art. LXIV), the object of this official interference being to provide against unreasonable demand, made by the employers on employees. Further, the Minister of Agriculture and Commerce is authorized by means of Departmental Ordinances to place restrictions on the working-hours of general workmen, and on the kind of work that may be imposed on female workers, and on the working-hours and kind of work for minors (Art. LXXI); also to cause the concessionaire to make suitable relief provisions both for workmen or their families when workmen meet with death or are disabled in the discharge of their duties. The concessionaire is under an obligation to draw up regular rules to deal with such cases, and to put them in practice with the approval of the Chief of the Mining Inspection Office.

Taxes on Mining.—At first the taxes were of two kinds, one on leases and the other on produce. The former was at the rate

of 1 *yen* for every 500 *tsubo* of metallic mines (except iron); 50 *sen* for every 500 *tsubo* of iron and non-metallic mines. The other tax was at the rate of 3 to 20 per cent. of the value of the output. In 1875 the tax on produce was abolished to give encouragement to the progress of the industry. But the imposition of a tax according to the extent of the concession was attended by a serious defect, for it induced the concessionaire to minimize the extent of the leases and therefore tended to prevent the proper exploitation of natural resources. By the further amendment, the original method of imposing two kinds of taxes was restored, but the rate for the lease was reduced to 30 *sen* per 1,000 *tsubo* and the tax on produce, iron excluded, 1 per cent. of the value of output (Art. LXXIII). This restoration of the tax on lease was partly effected with the object of restricting the evil of forestalment by speculators, while the tax itself was in conformity with a long-established usage. The tax on produce is determined according to quotations in the principal markets, the selling price to take the place of quotations in the absence of quotations (Art. LXXIV). Those for which the official quotations exist are at present gold, silver, copper, lead, antimony, coal and petroleum.

Original System.

Present System.

Sand Ore Diggings.—Sand ore diggings (alluvial gold, iron-sand, tin-sand) are treated by the laws in a manner somewhat distinct from other kinds of ore; in this case the right of priority is accorded to the owner of land containing those ores. But when the owner does not work the ores he is compelled to grant permission to do so to those who are desirous to dig them. The owner is entitled in that case to exact a suitable amount of fee. The working is left uninterfered with, excepting some restrictions of the nature of general Police regulations. However the diggings are allowed only to Japanese subjects and no foreigners whether as a private individual or as member of a company is allowed to undertake the work. In most other respects provisions of the Mining Regulations are correspondingly applied to the digging exploitation.

Mining Administration.—Mining administration necessary presents special features of its own and is distinct from the administration

ot other industries. To cite some of the principal points with which mining administration deals they are:

I. Matters relating to the registration as to the establishment and cancellation of the right, transfer of it, and pecuniary obligation.
 1. Matters relating to the granting of permission for trial or permanent borings.
 2. Matters relating to the annulment of the permission of trial or permanent borings.

II. Matters relating to the supervision of mining work.
 1. Matters relating to the approval of working plans.
 2. Matters relating to the correct representation of leases and the surveying of the beds.
 3. Matters relating to the amalgamation or splitting up of leases and to their re-arrangement.

III. Matters relating to mining police.
 1. Matters relating to the protection of public interest.
 2. Matters relating to the protection of mine-workers.
 3. Matters relating to the safety of mines and of architectural constructions therein.

IV. Matters relating to disputes.
 1. Disputes concerning the lease of land required in carrying on mining work.
 2. Disputes (first instance) concerning the deposits against rent and damage, price of land, etc. between land-owners and concessionaires.

The officials taking charge of all those affairs must possess technical knowledge bearing on those points and they therefore differ from ordinary administrative officials in the nature of the work they have to discharge.

The mining administration affairs are subdivided into categories, central and local. The former are taken charge of by the Director of the Mining Bureau subject to the control of the Minister of Agriculture and Commerce, while for attending to the latter section of business the country is subdivided into five divisions each under a Mining Inspection Office established by the Department of Agriculture and Commerce. The reason why local mining affairs are not left to the control of local administrative offices is because each

kind of mineral should be placed under uniform mode of control irrespective of the place of produce and because different treatments by different local offices would only have the effect of preventing the due development of the industry. The Chief of each Mining Inspection Office is the controlling-power of all the mining affairs occurring in his jurisdiction, and he deals with them either with the approval of the Minister or on his own responsibility, according to the relative gravity of matters. The administrative business relating to sand-ore diggings is practically identical to the foregoing, and therefore requires no special description here.

Statistics relating to the Mining Industry.

For the convenience of reference, statistics relating to the mining industries are given here in the form of appendix. Owing to unavoidable circumstances, these returns are not uniform as to the period they cover, though in most cases they begin in 1893 to end in 1902.

TABLE I.—MINING LOTS UNDER TRIAL-BORING AND THEIR AREAS.

Year.	Mining-Lot.	Area (acres).	Comparative Inc. or Dec.	Average Area per Lot.
1893...	5,700	671,484	100	118
1894...	6,095	910,819	136	149
1895...	3,972	721,120	107	182
1896...	3,411	722,774	115	227
1897...	4,143	1,240,265	185	299
1898...	3,959	1,349,860	201	341
1899...	3,995	1,391,134	207	343
1900...	5,184	1,785,593	266	341
1901...	6,859	2,189,811	326	319
1902...	6,467	2,038,976	304	315

TABLE II.—MINING-CONCESSIONS AND AREAS.

Year.	No. of Concession.	Area (acres).	Comparative Inc. or Dec.	Average Area per Concession.
1893...	3,513	152,767	100	43
1894...	3,725	194,568	127	52
1895...	4,276	232,686	152	54
1896...	4,882	305,471	200	63
1897...	5,123	363,896	238	71
1898...	5,270	405,106	265	77
1899...	5,355	453,753	297	85
1900...	5,389	481,845	315	89
1901...	5,725	575,969	377	101
1902...	5,908	645,901	425	109

TABLE III.—MINERAL SAND DIGGINGS LOTS.

Year.	Alluvial Gold.	Iron Sand.	Others.	Total.
1893	124	1,549	5	1,678
1894	111	1,566	5	1,682
1895	118	1,507	5	1,693
1896	201	1,478	4	1,683
1897	247	1,584	6	1,837
1898	294	1,646	8	1,948
1899	635	1,562	7	2,204
1900	2,199	1,507	8	3,714
1901	3,336	1,560	10	4,906
1902	3,604	1,523	11	5,138

TABLE IV.—OUTPUT OF PRINCIPAL MINERAL PRODUCTS.

METALS. (I)

	1891.	1892.	1893.	1894.	1895.	1896.
Gold (oz)... ...	5,598	10,045	8,812	23,362	28,821	30,928
Silver („) ...	224,842	332,406	766,360	1,699,030	2,323,673	2,068,564
Copper (ton) ...	2,399	4,669	15,408	18,115	19,114	20,079
Lead („)... ...	230	270	90	775	1,945	1,954
Tin („)... ...	—	17	41	47	48	50
Antimony: Refined (ton)	*2	*506	*2,665	*1,899	639	516
Antimony: Sulphate („)					1,044	826
Quicksilver (lbs)	—	—	—	—	1,061	3,876
Iron: Pig Iron (ton)	*3,438	*16,685	*6,770	*22,414	24,693	26,154
Iron: Wrought („)					39	25
Iron: Steel („) ...					1,065	1,194
Sulphate of Iron (ton)	—	—	—	—	63,243	88,869
Manganese („)...	44	—	122	2,592	17,112	17,935
Arsenic (lbs) ...	—	—	—	—	16,157	13,048

METALS. (II)

	1897.	1898.	1899.	1900.	1901.	1902.
Gold (oz)... ...	33,329	37,273	53,860	68,307	79,594	95,952
Silver („) ...	1,745,658	1,943,362	1,805,891	1,890,716	1,760,158	2,109,221
Copper (ton) ...	20,389	21,024	24,276	25,309	27,392	29,098
Lead („)... ...	771	1,703	1,988	1,878	1,803	1,645
Tin („)... ...	48	43	18	12	14	16
Antimony: Refined (ton)	823	233	229	349	428	520
Antimony: Sulphate („)	348	1,004	712	81	118	96
Quicksilver (lbs)	5,937	3,085	—	595	1,653	3,125
Iron: Pig Iron (ton)	26,910	22,510	20,778	22,455	56,334	44,393
Iron: Wrought („)	—	—	1,379	1,415	1,546	847
Iron: Steel („) ..	1,082	1,101	909	971	12,170	33,653
Sulphate of Iron (ton)	76,263	87,264	83,757	161,661	175,890	44,715
Manganese („)...	15,421	11,497	11,336	15,830	16,270	10,840
Arsenic (lbs) ...	24,739	15,709	11,187	10,290	22,727	26,859

NON-METALLIC MINERALS. (III)

	1891.	1892.	1893.	1894.	1895.	1896.
Black Lead (ton)	—	—	—	—	77	215
Coal (ton) Bituminous	—	—	—	—	4,765,373	5,018,287
Anthracite ...	*571,759	*889,111	*1,305,027	*2,629,150	45,462	94,400
Petroleum (barrel)	5,476	30,583	35,069	61,677	169,499	236,281
Sulphur (ton) ...	586	1,192	4,949	20,700	15,531	12,518

NON-METALLIC MINERALS. (IV)

	1897.	1898.	1899.	1900.	1901.	1902.
Black Lead (ton)	390	347	53	94	88	95
Coal, Bituminous (ton)	5,188,678	6,650,817	6,652,082	7,359,321	8,892,217	9,567,363
Anthracite ...	75,517	98,784	123,490	129,572	135,108	149,785
Petroleum (barrel)	262,154	318,302	537,875	869,719	1,115,419	993,804
Sulphur (ton) ...	13,582	10,321	10,237	14,439	16,548	17,651

N.B:—The star (*) represents the total output, the figures for each class being lacking.

TABLE V.—OUTPUTS OF PRINCIPAL MINERAL PRODUCTS AND THEIR VALUE IN 1902.

Kind.	Output.	Value (*yen*).
Gold (oz)	95,952	1,989,565
Silver (,,)	2,109,221	1,224,572
Copper (ton)	29,098	8,920,962
Lead (,,)	1,645	83,816
Tin (,,)	16	9,225
Antimony { Refined (ton)... ...	520	74,968
Antimony { Sulphate (,,)... ...	96	7,816
Quicksilver (lbs)	3,125	1,536
Iron { Big Iron (ton)	44,393	734,145
Iron { Wrought Iron (,,)	847	40,775
Iron { Steel (,,)	33,653	1,320,880
Sulphate of Iron (,,)	44,715	76,955
Manganese	10 840	35,414
Arsenic (lbs)	26,859	846
Black Lead (ton)...	95	9,283
Coal { Bituminous (,,)	9,567,361	15,912,262
Coal { Anthracite (,,)	149,785	179,410
Petroleum (barrel)	993,804	1,036,864
Sulphur (ton)	17,651	316,218
*Lignite	—	2,537,603

N.B:—The star (*) represents returns for 1901.

TABLE VI.—NUMBER OF MINE-EMPLOYEES AND NUMBER OF DAYS WORKED BY THEM IN A YEAR.

Year.	Number of Mine-Employees.			
	Metal-Mines.	Coal-Mines.	Others.	Total.
1898	51,706	75,831	5,194	132,731
1899	51,141	60,964	7,562	119,667
1900	54,805	70,508	5,698	131,011
1901	58,580	75,230	6,545	140,355
1902	60,339	78,947	7,653	146,939

Year.	Number of Days Worked by Mine-Employees in a Year.			
	Metal-Mines.	Coal-Mines.	Others.	Total.
1898	14,810,715	17,373,163	1,267,898	33,450,866
1899	15,102,605	16,539,887	1,141,946	32,784,438
1900	15,150,354	16,992,102	1,319,185	33,461,641
1901	16,102,664	19,414,676	1,414,331	36,931,671
1902	16,549,638	19,971,308	1,450,989	37,971,935

TABLE VII.—NUMBER OF SAND-ORE DIGGERS AND NUMBER OF DAYS WORKED BY THEM IN A YEAR.

Year.	Number of Diggers.				Number of Days Worked by Sand-Oil Diggers in a Year.			
	Alluvial Gold.	Sand Iron.	Others.	Total.	Alluvial Gold.	Sand Iron.	Others.	Total.
1893	—	—	—	—	45,949	339,589	19,596	405,134
1894	1,376	4,627	73	6,076	241,182	385,932	16,009	643,123
1895	1,426	4,148	65	5,639	309,411	369,192	11,375	689,978
1896	2,072	3,558	43	5,673	292,436	—	1,026	650,041
1897	4,659	6,373	41	11,073	—	—	—	—
1898	6,990	6,979	19	13,988	—	—	—	—
1899	2,476	3,577	55	6,108	706,714	280,723	15,285	1,002,722
1900	5,989	3,778	68	9,835	1,180,243	362,260	8,806	1,551,309
1901	7,093	3,500	49	10,643	1,047,740	299,789	6,921	1,354,450
1902	4,701	3,613	126	8,440	1,135,065	348,971	10,365	1,494,401

TABLE VIII.—WAGES. (in *sen*).

		Metal-Mines.				
		1898.	1899.	1900.	1901.	1902.
Male.	Miners	21.8	24.4	24.1	25.8	27.0
	Timbermen	19.2	20.2	21.0	21.5	22.5
	Mill Hands ...	13.9	13.6	14.4	15.1	16.5
	Smelterers... ...	17.1	17.9	16.0	16.7	20.0
	Carriers	16.0	16.8	19.8	24.8	21.3
	Miscellaneous ...	13.9	15.3	16.7	17.2	18.6
	Average	17.0	18.4	19.0	20.5	21.0
Female.	Mill Hands ...	7.3	7.6	7.6	7.9	7.7
	Carriers	8.4	8.9	9.6	10.4	10.1
	Miscellaneous ...	8.3	8.9	9.3	8.9	9.8
	Average	8.0	8.5	8.8	9.1	9.2
Boys and Girls.	Mill Hands ...	4.6	4.7	4.8	4.5	4.1
	Carriers	7.0	7.8	8.0	7.3	6.9
	Miscellaneous ...	6.0	6.0	6.5	6.4	7.3
	Average	5.6	6.2	6.4	6.1	6.1

		Coal-Mines.					Others.				
		1898.	1899.	1900.	1901.	1902.	1898.	1899.	1900.	1901.	1902
Male.	Miners	31.6	29.7	33.2	33.7	32.4	19.6	19.0	21.9	26.3	27.4
	Timbermen ...	30.8	30.7	31.1	31.3	33.5	18.7	20.9	18.7	20.2	22.0
	Mill Hands ...	16.9	16.6	17.4	17.9	17.7	15.5	17.2	17.8	17.8	17.6
	Smelterers ...	—	—	—	—	—	20.2	34.7	23.0	23.1	24.7
	Carriers	22.0	21.1	22.2	22.8	24.4	18.7	19.0	23.5	25.7	28.1
	Miscellaneous...	18.0	18.6	18·3	17.6	19.0	16.4	17.4	20.4	20.5	23.2
	Average	23.9	23.3	24.4	24.7	25.2	18.2	18.9	20.9	22.3	23.8
Female.	Mill Hands ...	10.1	10.6	9.9	10.7	10.4	10.3	11.3	12.8	10.7	10.6
	Carriers	14.3	13.4	13.9	13.1	13.9	12.5	14.3	12.2	12.7	12.5
	Miscellaneous...	11.4	11.3	12.7	11.6	13.2	9.2	10.7	9.1	9.8	9.9
	Average	11.9	11.8	12.0	11.8	12.5	10.7	12.1	11.4	11.1	11.0
Boys and Girls.	Mill Hands ...	6.7	6.2	6.7	6.9	7.1	—	—	—	—	—
	Carriers	—	—	—	—	—	—	—	—	—	—
	Miscellaneous...	8.9	9.0	9.3	10.1	10.6	—	—	—	—	—
	Average	7.8	7.6	8.0	8.5	8.9	—	—	—	—	—

TABLE IX.—NUMBER OF MOTORS USED AND KIND.

METAL-MINES.

Year.	Water Wheels.		Boilers.		Oil Engines.		Total.	
	No.	H. P.	No.	H. P.	No.	H. P.	No.	H. P.
1898.....	548	4,471	141	6,458	4	17	693	10,946
1899.....	600	5,433	143	6,631	4	30	747	12,094
1900.....	607	6,291	175	6,654	2	20	784	12,965
1901.....	678	7,526	181	7,118	4	61	863	14,705
*1092.....	775	8,669	184	7,267	8	84	967	16,020

COAL-MINES.

Year.	Water Wheels.		Boilers.		Oil Engines.		Total.	
	No.	H. P.	No.	H. P.	No.	H. P.	No.	H. P.
1898.....	1	18	620	36,714	—	—	621	36,732
1899.....	1	18	704	43,164	—	—	705	43,182
1900.....	1	18	848	48,761	—	—	849	48,779
1901.....	—	—	999	52,823	—	—	999	52,823
*1902.....	—	—	1,157	58,921	20	1,004	1,177	59,925

OTHERS.

Year.	Water Wheels.		Boilers.		Oil Engines.		Total.	
	No.	H. P.	No.	H. P.	No.	H. P.	No.	H. P.
1898.....	3	132	103	2,141	—	—	621	36,732
1899.....	3	132	148	3,150	—	—	705	43,182
1900.....	3	132	223	4,526	—	—	849	48,779
1901.....	5	182	343	7,042	—	—	999	52,823
1902.....	5	182	420	8,658	—	—	1,177	59,925

BOILERS.

Year.	Water Wheels.		Boilers.		Oil Engines.		Total.	
	No.	Ind. H. P.	No.	Ind. H. P.	No.	Ind. H. P.	No.	Ind. H. P.
1898.....	162	3,636	440	13,434	33	315	635	17,294
1899.....	163	3,736	499	14,921	46	357	708	19,014
1900.....	171	3,981	566	16,793	82	864	819	21,638
1901.....	174	4,100	638	19,115	174	2,399	986	25,614
1902.....	180	1,195	712	20,358	213	3,979	1,105	28,532

N.B.—The star (*) represents returns at the end of June, others being for December.

TABLE X.—MILEAGE OF IRON CHAINS.

Year.	Metal-Mines.	Coal-Mines.	Others.	Total Mileage.
1898	26	3	14	43
1899	31	3	14	48
1900	35	4	16	55
1901	41	4	30	75
*1902	52	5	32	89

MILEAGE OF PETROLEUM PIPES.

Year.	Between Oil Wells and Tanks.	Between Tanks and Refineries.	Refinery Premises.	Total Mileage.
1898	7	20	11	38
1899	9	41	13	63
1900	13	92	15	120
1901	18	118	17	153
*1902	46	149	23	218

RAILROAD MILEAGE.

	Metal-Mines.			Coal-Mines.			Others.			Total.		
	In the Pit.	Outside the Pit.	Total.	In the Pit.	Outside the Pit.	Total.	In the Pit.	Outside the Pit.	Total.	In the Pit.	Outside the Pit.	Total.
1898...	129	127	256	132	99	231	—	5	5	261	231	492
1899...	150	137	287	151	117	268	—	5	5	301	269	560
1900...	170	152	322	184	140	324	—	1	1	354	293	647
1901...	189	161	350	212	137	349	—	18	18	401	316	717
*1902...	213	174	387	342	226	568	1	19	20	556	419	975

N.B.—The star (*) represents returns at the end of June, others being at the end of December.

TABLE XI.—NUMBER OF ACCIDENTS IN THE MINES.

	Metal-Mines.														
	In the Pits.														
	By Collapse.		Accidents in Pits and Shafts.		Caused by Explosives.		Other Causes.		Total.		Outside.		Grand Total.		Death rate per 1,000 Mine-workers.
Year.	No. of Case.	No. of Death.	No. of Case.	No. of Death.	No. of Case.	No. of Death.	No. of Case.	No. of Death.	No. of Case.	No. of Death.	No. of Case.	No. of Death.	No. of Case.	No. of Death.	
1898	—	—	1	2	—	—	—	—	1	2	—	—	1	2	.04
1899	3	3	—	—	—	—	1	1	4	4	7	223	11	227	4.44
1900	5	3	1	—	6	—	9	23	21	26	22	19	43	45	.82
1901	36	13	3	1	18	3	12	7	69	24	26	4	95	28	.48
1902	29	16	5	3	15	2	9	7	58	28	30	122	88	150	2.48

Coal-Mines.

Year.	By Collapse.		Accidents in Pits and Shafts.		Caused by Explosives.		Caused by Explosion of Gas or Coal Dust.		Other Causes.		Total.	
	No. of Case.	No. of Death.	No. of Case.	No. of Death.	No. of Case.	No. of Death.	No. of Case.	No. of Death.	No. of Case.	No. of Death.	No. of Case.	No. of Death.
1898	3	3	2	1	—	—	7	4	1	9	13	17
1899	12	8	7	10	1	—	16	217	5	11	41	246
1900	45	20	18	4	3	—	40	4	9	4	115	32
1901	123	33	36	6	4	—	46	24	23	99	232	162
902	219	41	71	11	8	—	43	23	21	32	362	107

	Outside.		Grand Total.		Death rate per 1,000 Mine-Workers.
	No. of Case.	No. of Death.	No. of Case.	No. of Death.	
1898	1	—	14	17	.22
1899	4	—	45	246	4.04
1900	10	2	125	34	.48
1901	14	1	246	163	2.12
1902	13	—	375	107	1.36

Year.	Others. By Collapse.		Accidents in Pits and Shafts.		Caused by Explosives.		Other Causes.		Total.		Outside.		Grand Total.		Death rate per 1,000 Mine-workers.
	No. of Case.	No. of Death.	No. of Case.	No. of Death.	No. of Case.	No. of Death.	No. of Case.	No. of Death.	No. of Case.	No. of Death.	No. of Case.	No. of Death.	No. of Case.	No. of Death.	
1898	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
1899	—	—	—	—	—	—	2	5	2	5	—	—	2	5	.66
1900	—	—	—	—	—	—	1	—	1	—	4	38	5	38	6.67
1901	—	—	—	—	—	—	2	1	2	1	1	—	3	1	.15
1902	1	—	1	1	—	—	—	—	2	1	7	12	9	13	1.70

TABLE XII.—EXPORT AND IMPORT OF PRINCIPAL MINE PRODUCTS.

(1). EXPORT.

Year.	Quantity. Copper. (ton).	Antimony. (ton).	Manganese. (ton).	Coal. (ton).	Sulphur. (ton).
1898	16,454	1,338	9,985	1,819,807	12,627
1899	21,304	1,046	9,395	2,029,805	16,684
1900	20,478	377	12,903	2,422,007	17,966
1901	21,991	279	8,953	2,945,593	17,928
1902	20,654	1,160	2,694	2,962,251	21,273

Year.	Value (*yen*). Copper.	Antimony.	Manganese.	Coal.	Sulphur.	Total.
1898	3,633,538	108,299	78,167	6,120,311	238,507	10,178,822
1899	5,691,679	103,258	76,344	5,892,357	287,434	12,051,072
1900	6,362,968	53,854	112,449	6,851,828	349,142	13,730,241
1901	6,952,305	39,246	93,589	8,771,137	330,940	16,187,217
1902	5,130,992	135,806	26,270	8,635,209	379,542	14,307,819

(2). IMPORT.

Year.	Quantity. Lead. (ton).	Tin. (ton).	Quicksilver. (ton).	Zinc. (ton).	Iron. (ton).	Petroleum. (barrel).
1898	3,489	360	196,689	2,996	288,273	1,608,464
1899	3,805	366	203,888	3,885	146,276	1,244,928
1900	7,017	399	222,429	6,095	249,839	1,610,204
1901	6,976	471	189,765	3,526	184,875	1,642,771
1902	4,740	437	206,943	4,666	180,715	1,797,147

Year.	Value (*yen*). Lead.	Tin.	Quicksilver.	Zinc.	Iron.	Petroleum.	Total.
1898.....	208,192	113,629	88,152	362,408	7,027,855	3,749,329	11,549,565
1899.....	261,950	180,644	109,507	655,574	6,053,064	3,947,666	11,208,405
1900.....	550,755	236,552	129,349	831,892	11,972,603	6,796,670	20,517,821
1901.....	497,402	265,122	109,306	465,380	7,139,864	7,471,701	15,948,775
1902.....	286,234	250,504	122,099	666,895	6,803,649	7,468,585	15,597,966

PRIMARY INDUSTRIES.

SECTION IV.

FISHERY.

Introductory—Fishing-Grounds—Fishery and Fishery Industry—Distribution of the Principal Fish etc.—Finance Standing of the Fishermen—Agriculture—Salt-Refining—Markets—Fishery Legislature.

I. INTRODUCTORY.

NUMBERS OF FISHERMEN AND BOATS.—Owing to its geographical position, to the direction of the marine currents in its vicinity and also to the abundance of suitable indentations along the well-wooded coast, Japan is an ideal country for the fishermen. It is not surprising therefore that there are 900,000 families of fishermen or of persons engaged in the marine industry, or over three million individuals, and that the number of fishing boats total over 400,000. Fish and other marine products have constituted from olden times important items of food-stuffs of our people, and this partiality of ours for Lenten fare is also shared by our nearest neighbors the Chinese who have been, for centuries back, principal purchasers of our marine products.

EXPANSION OF FISHERY ENTERPRISE.—With the steady increase of our population and the greater perfection of the means of transportation in the interior, the demand on fishing products has began to show striking advance, an advance further accelerated by an increasing demand from abroad. Under these circumstances, our fishermen can no longer remain satisfied with coasting work alone, but are obliged to a greater extent than ever to venture out into the open sea and even to the distant coasts of Korea and of the South Pacific.

II. FISHING-GROUNDS.

Influence of Sea Currents on Fishing-Grounds.—As described in the chapter on climate, the two sets of sea-currents flow along each coast of our country, the Pacific coast and the coast of the Sea of Japan. Each coast is influenced to a greater or less extent by a warmer current coming from the south and a colder current from the north. The predominance of the one or the other makes a great difference in the temperature of the sea. For instance, along the coast northward from Kinkazan, Honshu, the average temperature is below 15° C., while along the eastern coast of Hokkaidō and the Kuriles it is below 10°, owing, in both cases, to the predominance of the colder streams. On the other hand, owing to the presence of warmer currents along the coast southward from the group of islands off Izu as far as the southern extremity of Kyūshu, the average record there is above 20°, while along the coast of the Bonin islands and Oshima off Satsuma, and the eastern coast of Formosa the temperature is as high as 23°. This presence of two different sets of sea-currents on our coasts, while affecting the geographical distribution of the finny tribe, also contributes to the diversity and richness of our marine fauna and flora. A rough description of the seas which surround our islands, of our rivers and lakes will be given below.

1. The Pacific Ocean.—One side of the whole length of Japan beginning with the Kuriles on the side north extending to Formosa on the south, faces the Pacific Ocean. The Kuriles and Formosa are separated by as many as 29 degrees in latitude, and not only in the climate therefore are these two extremities of Japan widely distinct, but also in the temperature as well as in the depth of the sea a great diversity exists in our country, according to places.

To the north of Kinkazan, in the north-eastern part of Honshu, is situated the famous submarine depression, that is Tuscarora. A warm current passes to the south of this part so that the vicinity is very rich both in fauna and flora, sardine, bonito, pagrus, yellow-tail, tunny, cattle-fish, haliotis, etc. abounding. A cold current runs to the north of this

Kinkazan.

depression, and in consequence the fauna and flora living to the north and south of Kinkazan are distinct from each other.

In the Southern Japan and Formosa.

In the sea between the southmost archipelago of Japan proper and Formosa there exists a strong warm current. The result is that in this vicinity many kinds of migratory fish are found, especially bonito. The eastern, that is the Pacific shore of Formosa, is precipitous with no good anchorages for ships, and the sea is moreover very deep. The inhabitants too are aborigines, and the fishery as carried on along this coast hardly deserves, therefore, any notice. On the other hand, the sea on the western shore is of moderate depth and the fisheries of sardine, horse-mackerel, "tai" (pagrus), shark, grey mullet, etc., are actively carried on. However, during rainy seasons, winter and spring in the northern districts and summer and autumn in the southern districts, fishing is practically suspended.

2. The Sea of Japan.—A branch of the Black Stream flows through this sea. This branch current runs all the year round along the western coast of Hokkaidō and through the straits of Tsugaru and Sōya. However, at the eastern coast of Korea, especially along the coast northward of Vladivostock, it is found only in summer. The difference between the high and low tides on the opposite coasts does not exceed 1 to 3 *shaku*. At high-tide the current runs northward through the Straits of Korea but on the coast of Japan the tides are very weak and their movement very irregular.

Tunny, bonito and other migratory fish enter this sea along the course of the southern warm current, but in the northern part of the sea, where the influence of a colder current predominates, the principal fish are herring, cod, and the like.

3. The Sea of Okhotsk.—The province of Kitami in Hokkaidō faces this sea, and the fisheries as carried on near the towns of Sōya, Esashi and along the coast in general chiefly consist of herring and salmon. The open sea fishery is not yet developed, but there is every possibility of fisheries such as cod and others attaining a great importance in the near future.

4. Inland Seas.—The largest and most important inland sea

in Japan is the Inland Sea already described. The movements of the tides in this enclosed basin of sea are regulated by the three channels of Shimonoseki, Bungo and Kii. The sea is generally shallow, and as the temperature varies considerably according to the seasons, many fish that come in the beginning of the warm season, go away in autumn as the colder season approaches. Sardine, pagrus, grey mullet, etc. abound. The shores of sea are also noted for their flourishing salt refineries.

The inland seas that come next in importance to the Inland Sea are the Sea of Ise, Tokyo Bay, and the Sea of Ariyake. The fauna living in these sea are more or less distinct according to the size of each basin, the depth of water in it and the nature of the sea-bed.

5. Rivers and Ponds.—Rivers as fishing ground, do not of course depend on their length and depth alone. In general, salmon find their way up most of the rivers in the northern districts of Honshū and in Hokkaidō, while on the other hand the *Plecoglossus altivelies* is found in most of the rivers in the central and southern part of Honshū.

On Lake Biwa, Shinji, Kasumigaura, and Hachirogata fisheries are actively carried on. The principal fresh-water fish that are found in the rivers and pounds of Japan are carp, Crussian carp, eels, etc.

III. FISHERY AND THE FISHERY INDUSTRY.

1. Fishermen.—Our fisheries first attained their greatest development in the Inland Sea, being extended afterwards to the west and to the east, and finally to the north. This being the case the fishing population is densest along the shores of the Inland Sea, and is comparatively less along the shores of the Sea of Japan and the shores of Hokkaidō. The density of the fishing population in the main fishery regions and the rate of population per 1 *ri* of coast line are shown in the following table:—

		Hohshu.	Shikoku.	Kyūshu.	Hokkaidō.	Total.
Coast-Line (*ri*)...		2,705	676	2,406	1,242	7,029
No. of Households		545,937	80,471	228,804	51,920	907,132
Population		1,832,829	324,471	930,878	250,422	3,338,600
Per, *ri* Coast-line.	No. of Households ...	201.82	119.03	95.09	41.80	129.05
	Population...	677.57	479.98	386.89	201.62	474.97

Note:—The figures for households and population in the above table include both fishermen and those who are engaged in manufacturing marine products. They are based on the returns carried out in 1891.

2. Fishing-Boats.—Fishing-boats for use either on the sea or in inland-water number about 420,000. Here are the returns compiled in 1900:—

	Boats over 5 *ken* in Length.	Boats less than 5 *ken* in Length.	Total.
Honshu	4,398	238,238	242,636
Shikoku	334	30,684	31,018
Kyūshu	275	76,397	76,672
Hokkaidō	12,675	59,522	72,197
Total	17,682	404,841	422,523

Defects of Japanese Fishing-Boats.

For all their serviceableness, Japanese fishing-boats are not without defects. For instance they are comparatively frail, and as they are principally made for rowing, they are hardly fit to sail against the wind. The authorities recently begun to take all these points into consideration, with the result that our fishermen are gradually building their boats after the foreign style, and providing them with decks or special apartments protected from the free entrance of water. These improvements are now to be found in our fishing-boats that are pursuing their business on the shores of Korea.

Foreign-Style Boats.

The Government has also encouraged the construction of fishing-boats of the Western style, by enforcing from 1898 the Law for the Encouragement of Pelagic Fishery. The result of that law has been that boats of this new style have gradually began to come into use, as shown in the following table:—

Year.	Boats and Crew receiving Bounties by Law. No.	Gross Tonnage.	Crew.	Boats Licenced to Pursue Sealing, though without Receiving Bounty. No.	Gross Tonnage.
1898	8	694	214	1	99
1899	14	1,419	379	—	—
1901	15	1,621	392	1	93
1902	14	1,028	296	3	165
Total	51	4,762	1,281	5	357

3. Fishing-Gears.—The different kinds of fishing-gear used in Japan are too numerous to be enumerated here in detail. The principal kinds of gears both for net-fishing and for angling, are as follows :—

Net-Fishing Gears.

The pound-net is extensively used throughout the country. In Hokkaidō it is used for herring and salmon, and in Honshu and Kyūshu for capturing tunny, yellow-tail, bonito, etc. A net of this kind sometime measures as long as several thousand yards long. The seine-net is used for capturing sardine, anchovy and other shoal fish. It is, in this country, one of the latest innovations in the line of nets, having been made after an American model. Sometimes a seine-net is of enormous size, extending as long as three miles in length. Then there are drift-nets, grill-nets, trawl-nets, dredge-nets, etc.

There is also another kind of net called *shiki-ami* (spread-net) which is spread on the bottom, and lifted up to catch the fish that happen to enter it.

Angling-Gears.

Angling-gears are of two kinds, viz., long-line and hand-line, the former being a line with a number of short suspenders. It is left stretched in the water.

There are, besides the above, other fishing devices, as weir and trap generally used in ponds or streams.

Number and Kind of Nets.

The number of different kinds of nets used in the different parts of the Empire is as follows according to the returns made in 1891 :—

Kind.	Honshu.	Shikoku.	Kyūshu.	Hokkaidō.	Total.
Pound-Nets	20,329	876	632	5,551	27,388
Shiki-ami, etc.	19,093	1,160	3,188	6	23,447
Purse Seine, etc.	7,640	326	228	79	8,273
Trawl-Nets, etc.	85,366	6,897	12,439	7,462	112,164
Seines, etc.	21,374	3,463	7,041	1,511	33,389
Drift-Nets and Grill-Nets..	540,252	11,275	24,639	234,830	810,996
"Square-Nets"	6,395	540	1,781	150	8,866
"Throw-Nets"	62,135	2,512	14,797	20	79,464
Total	762,584	27,049	64,745	249,609	1,103,987

4. VALUE OF TAKES OF FISHES AND OF MARINE PRODUCTS.—The returns showing the value of the takes of fish and of the marine products for the five years ending 1900 are as follows :—

Year.	Takes. *yen.*	Marine Products. *yen.*
1896	38,132,001	24,155,239
1897	45,038,816	29,740,358
1898	44,840,022	26,190,460
1899	52,151,878	31,678,766
1900	56,833,150	32,725,411
Average	47,399,173	28,898,047

The Main Districts.

The returns for 1900 distributed among the main divisions of the Empire, the result is as follows :—

	Takes.	Marine Products.
Honshu	34,430,746	16,147,437
Shikoku	4,303,031	2,317,218
Kyūshu	6,251,304	3,630,684
Hokkaidō	11,848,069	10,630,072
Total	56,833,150	32,725,411

Takes and Kind of Fish.

The takes made in 1900 may be divided as follows according to the kind of fish. The figures for Hokkaidō represent the amount of marine products, there being no returns available for the takes alone.

Kind.	Quantity (*kwanme*).	Value (*yen*).
Herring	29,982,824	7,144,072
Sardine	48,739,197	7,306,780
Bonito...	10,996,716	4,365,887
Cuttle-Fish	4,359,816	1,562,951
Calamaries...	3,255,896	1,136,710
Mackerel	7,512,857	2,159,018
Tunny...	4,084,156	1,814,704
Yellow-Tail	5,462,602	2,224,297
Cod	1,817,148	372,827
Shark	1,298,998	464,616
"Tai"	5,228,835	4,109,802
Salmon	2,045,569	1,023,419
Trout	170,273	129,259
Plecoglossus	586,479	449,213
Sea-Ear (*Haliostis*)	869,563	508,478
Beche de mer	683,810	174,494
Prawns	4,200,264	1,345,340
Oyster...	993,655	190,091
Cytherea	1,518,622	93,305
Mussel...	296,800	15,366
Grey Mullet	1,574,504	877,080
Poulpe	1,320,632	462,374
Scomberomorous sinensis	1,245,047	1,011,187
Horse Mackerel...	2,270,473	612,615
Halibut	681,066	306,125
Barrandas	384,170	134,382
Muraenosox cinereus...	606,057	364,053
Lateolabrax Japonicus	254,557	185,669
Sand Eel	565,384	68,405
Mysis	1,188,245	153,932
Coryphaena hippurus...	575,393	200,698
Flying Fish	1,260,437	103,214
Sparus Schlegeli...	337,055	264,710
"Konoshiro"	392,556	185,760
Flat-Fish	2,354,440	823,355
Eel	1,023,664	650,520
Cololabis saira	137,226	62,122
Carp	128,493	122,842
Crussian Carp	362,321	194,759
Sea-Weed (algæ)	7,441,117	870,918
Other Kinds	2,135,888	12,587,501
Total	160,342,855	56,833,150

The classification of marine products for 1900 is as follows:—

Kind.	Quantity (*kwamme*).	Value (*yen*).
Cuttle-Fish...	1,665,493	2,466,004
Beche de mer	94,141	206,757
Sea Ear (dried)	129,555	406,549
Sardine (dried)	2,535,988	914,603
Anchovy (dried)	564,793	277 085
Sardine (boiled and dried) ...	3,142,675	2,138,777
„ (salted)...	2,204,532	617,263
Mussel (dried)	63,414	64,117
Bonito (dried and smoked) ...	1,972,460	4,881,303
Tunny („) ...	164,495	288,809
Prawn (dried)	598,220	682,321
Shark Fin	99,824	264,171
"Kainohashira" (abductor muscle of shell-fish)	9,382	35,663
Mackerel (salted)	1,410,681	556,357
Tunny (salted)	214,848	79,008
Cod (dried)	144,219	131,775
Cod (salted)	317,203	55,651
Salmon (salted)...	1,131,194	523,335
"Hoshinori"	148,615	472,211
„ (sheets)...	8,297,500	41,736
Herring (dried)...	5,749,791	1,204,332
Herring (guano)...	26,147,225	7,058,117
Sardine (guano)...	4,483,018	1,400,319
Fish Oil	1,679,311	399,648
Yellow-Tail (salted)	781,244	433,898
"Tengusa"	285,642	187,588
"Funori"	257,932	154,066
Others	—	6,755,948
Total	(*kwam.*) 55,995,895 (sheets) 8,297,500	32,725,411

IV. DISTRIBUTION OF THE PRINCIPAL FISH, THEIR VALUE, CAPTURE AND MODE OF CURING.

(A). FISH.

1. HERRING (*Clupea pallasi*).—This fish is caught in Hokkaidō, Aomori and Akita. In Hokkaidō the fishing season extends

from March to May. The fishing grounds lie along the western shores. Pond-nets and grill-nets are used. The takes during the five years ending 1900 and the value of these takes were as follows :—

Year.	Quantity (*kwam.*).	Value (*yen*).
1896	41,028,680	8,340,666
1897	51,818,880	10,650,618
1898	35,083,640	7,289,811
1899	38,057,480	9,047,957
1900	29,982,874	7,144,072
Average	39,194,311	8,494,625

Enormous quantities of this fish being caught at a time, it is not possible to carry out any elaborate process of curing. In general only the part along the backbone and raw are used for food, the other parts being pressed for oil and guano. This guano amounts to 700,000 to 1,000,000 *koku* a year (40 *kwan* equal to 1 *koku*.) The market of guano is vitally related to the prosperity of the Hokkaidō fisheries, and the recent import of bean-cakes from North China, of herring guano from Russian Siberia, and also sardine from Korea, is seriously affecting the markets of Hokkaidō guano. In view of this circumstance, the authorities have lately begun to encourage the preparation of smoked and salted herring, the former among the fishermen of Akita and Aomori, and the latter among those of Hokkaidō. Samples have been sent both to China and Australia.

2. Sardine (*Clusanodon melanosticla*) and Anchovy (*Engraulis Japonicus*).—These fish are caught almost everywhere along our shores with seine-nets, pond-nets or purse-seines. The greater part of the fish is used as guano, but no small part is used as food, after having been boiled and dried. The yield amounts to about 40 million *kwam* valued at about 6 million *yen*. The returns for last five years are as follows :—

Year.	Quantity (*kwam.*).	Value (*yen*).
1896	48,610,784	4,601,782
1897	38,392,354	4,893,412
1898	36,633,689	5,711,023
1899	48,735,376	6,579,617
1900	48,749,277	7,310,120
Average	44,224,300	5,819,191

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The demand for sardine and anchovy as food-stuff being still limited in Japan, the authorities are encouraging the people to manufacture tinned sardine and anchovy sauce after the French style.

3. Bonito (*Thynnus pelamis*).—This fish is found in most parts of our southern seas, and as it haunts warm currents, its area of distribution is comparatively wide. It is chiefly caught by rod and line, the bait used being generally living sardine. The fish is a favorite article of food. The business of making dried and smoked bonito, called "Fushi," is highly important, it being used for seasoning the dishes. The business is extensively carried on in Tosa and Izu. The returns for the last five year are shown below:—

Year.	Takes (*kwam.*).	Value (*yen*).	Dried Bonito (*kwam.*).	Value (*yen*).
1896...	9,070,229	2,407,828	1,094,407	1,796,137
1897...	7,736,432	2,754,442	1,228,063	2,974,448
1898...	9,060,619	3,404,265	1,472,269	2,951,907
1899...	9,688,513	3,931,974	1,375,926	3,376,668
1900...	10,990,716	4,347,887	1,972,460	4,881,303
Average	9,309,302	3,369,279	1,428,625	3,196,093

4. "Tai" (*Pagrus*).—There are two species of this fish, viz., "Ma-dai" (*Pagrus major*) and "Chi-dai" (*Cardinalis*). The fish is very widely distributed but its most noted fishing-ground is the Inland Sea where the fish abounds in the intermediary season of spring and summer. They are first gathered together by "driving nets" and then caught by seines hauled by boats. Long lines are also used to some extent for capturing the fish.

The fish is mostly sold raw, and very seldom in a salted form. It is also found very largely in the seas of Korea. The returns during the last five years are as follows:—

Year.	Capture (*kwam.*).	Value (*yen*).
1896	5,117,708	2,214,377
1897	4,752,147	2,609,187
1898	4,445,846	2,695,830
1899	4,178,697	3,316,733
1900	5,228,835	4,109,802
Average	4,744,647	2,989,186

5. "SAWARA" (*Scomberomorus Sinensis*).—This fish frequents more our eastern and south-western seas and less our northern seas. It swims in shoals and is caught by drift-nets. In the Inland Sea it is caught in the spawning season :—

Year.	Capture (*kwam.*).	Value (*yen*).
1896	1,110,955	393,913
1897	995,351	509,012
1898	1,097,964	624,027
1899	1,044,086	766,093
1900	1,245,047	1,011,187
Average	1,098,881	660,846

6. TUNNIES (*Thunnus schlegeli*).—The fish are found everywhere and caught by means of pound-nets, drift-nets and long-lines. They are generally sold fresh, but are sometimes preserved in salt or used in the same way as dried bonito. The figures for the last five years are :—

Year.	Capture (*kwam.*).	Value (*yen*)
1896	5,034,733	1,348,413
1897	5,107,859	1,532,091
1898	3,484,084	1,423,123
1899	3,108,426	1,327,268
1900	4,084,156	1,814,704
Average	4,163,852	1,489,120

7. YELLOW-TAIL (*Seriola quinqueradiata*).—This fish is caught mostly in our south-western seas and in the Sea of Japan, with pound-nets, gill-nets and long-lines. It is sold either fresh or salted :—

Year.	Capture (*kwam.*).	Value (*yen*).
1896	3,854,715	1,056,566
1897	3,547,520	1,128,666
1898	3,345,915	1,108,295
1899	3,784,358	1,683,773
1900	5,462,602	2,224,297
Average	3,999,022	1,440,319

8. MACKEREL (*Scomber colias*).—This fish is caught everywhere by means of *Shiki-ami* ("spread"-nets), seines, and hand-lines. It is mostly preserved in salt. The takes are as follows :—

Year.	Capture (*kwam.*).	Value (*yen*).
1896	6,510,478	1,069,663
1897	5,789,806	1,299,612
1898	6,445,249	1,475,716
1899	5,584,275	1,934,091
1900	7,512,857	2,159,018
Average	6,388,533	1,587,620

9. Cod (*Gadus brandti*).—This fish is caught in the northern part of Honshū and along the coast of Hokkaido, long-lines and gill-nets being generally used for capturing it. It is sold in salted or dried state while the oil is valuable as a medicine. The figures for the last five years are as follows:—

Year.	Capture.		Dried Manufacture.		Salted.	
	Quantity. *kwam.*	Value. *yen.*	Quantity. *kwam.*	Value. *yen.*	Quantity. *kwam.*	Value. *yen.*
1896... ...	1,463,991	257,764	213,975	124,434	232,109	33,175
1897... ...	2,311,725	444,934	1,068,104	396,555	286,970	33,577
1898... ...	2,052,252	391,291	1,029,135	380,379	184,745	20,079
1899... ...	2,625,632	539,673	150,650	70,200	290,460	129,512
1900... ...	1,817,148	372,827	144,219	131,775	317,203	55,651
Average ...	2,054,150	401,298	521,216	220,669	262,297	54,399

10. Salmon (*Oncorhyuchus haberi* and *O. Perri*).—Salmon and trout come up the streams flowing into the Sea of Japan or the northern part of the Pacific. They are especially abundant in Hokkaidō and the prefectures of Aomori, Akita and Niigata. In the sea, pound-nets are used while in the rivers seines are generally preferred. Traps are also used in some places. Both salmon and trout are preserved in salt or are tinned. The catches for the last five years are as follows:—

Year.	Salmon.		Trout.	
	Quantity (*kwam.*).	Value (*yen*).	Quantity (*kwam.*).	Value (*yen*).
1896	2,725,360	989,683	2,769,678	300,905
1897	3,528,700	1,411,918	290,723	80,032
1898	3,103,080	1,344,753	263,993	81,312
1899	2,533,440	1,096,217	191,621	86,412
1901	2,045,569	1,023,419	170,273	129,259
Average	2,787,230	1,173,198	737,258	135,584

(B). SHELL-FISH AND MOLLUSKS.

EAR-SHELL, ETC.—Of the shell-fish caught in our seas, ear-shell (*Haliotis*) is of the greatest commercial value, for besides its flesh being largely exported to China the mother-of-pearl obtained from it is in large demand for ornamental purpose. Then comes the oyster (*Ostrea*) in importance. The other shell-fish of commercial value are the Pearl-Oyster (*Avicula*), Mussel (*Mytilus*) Scallop (*Pecten*) Razor shell (*Solen*), *Solecurtus constricta*, *Cytherea meretrix*, *Mactra sulcatoria*, *Arca granosa*, etc. The returns giving the takes and the value are shown below:—

Year.	Ear-Shell.		Oyster.		*Cythera.*		Mussel.	
	Quantity.	Value.	Quantity.	Value.	Quantity.	Value.	Quantity.	Value.
	kwam.	*yen.*	*kwam.*	*yen.*	*kwam.*	*yen.*	*kwam.*	*yen.*
1896.....	982,909	338,794	1,304,559	110,181	605,730	36,408	647,493	26,046
1897.....	782,617	363,813	1,098,707	103,903	684,661	59,060	443,604	21,755
1898.....	717,196	391,629	597,350	120,775	1,067,651	100,989	377,078	25,839
1899.....	1,037,572	545,366	963,181	187,039	1,483,388	119,870	258,205	13,403
1900.....	869,563	508,478	993,655	190,091	1,518,622	93,305	296,680	15,330
Average ...	877,971	429,616	991,490	142,398	1,072,010	81,926	404,612	20,475

LOBSTERS (*Palinurus*) AND PRAWNS (*Penaens*).—Of the two the former are caught in the Pacific coast and the latter in the Inland Sea and other inlets. Lobsters are generally caught by gill-nets and prawns by trawl-nets. The takes and value of these crustaceans are shown below:—

Year.	Capture (*kwam.*).	Value (*yen*).
1896	3,440,503	648,982
1897	3,641,732	815,015
1898	3,489,962	883,388
1899	4,588,174	1,095,485
1900	4,200,264	1,345,340
Average	3,872,127	957,642

3. CUTTLE-FISH AND SQUIDS.—They are caught by lines and trawls. In the dried form they rank first on the list of exported marine products:—

Year.	Quantity (*kwan*).	Value (*yen*).
1896	10,060,515	1,809,243
1897	8,578,722	1,880,941
1898	7,081,095	1,949,490
1899	7,616,099	2,492,108
1900	7,615,712	2,699,661
Average	8,190,429	2,166,289

(C). SEA-WEEDS.

The sea-weeds that deserve to be mentioned on account of their commercial value are the "Kombu" (*Laminaria*) "Amanori" (*Porphyra tenella*, Kijelhum), "Tengusa" (*Galidium lamouroux*), "Hijiki" (*Cystophyllum I Agardh*), "Arame" (*Ecklonia Hornemanna*), "Wakame" *Undaria Suringar*), all of which are used as food. Then there are the "Funori" *Gloivpeltis J, Agardh* which are used for making paste, and the "Kajime" (*Eklonia*) from which iodine is extracted:—

	"Kombu."		"Tengusa."	
Year.	Quantity (*kwam.*).	Value (*yen*).	Quantity (*kwam.*).	Value (*yen*)
1896	6,097,547	494,562	944,619	238,818
1897	9,066,984	630,461	736,925	195,031
1898	5,053,154	409,228	479.141	146,310
1899	7,965,725	734,129	761,317	201,266
1900	6,454,078	602,777	965,652	252,305
Average	6,927,498	574,231	777,531	206,746

(D). MARINE MAMMALS.

1. Whales.—The right whale, sulphur-bottom whale, and humpback whale that were formely caught in very large number in the seas off Kyūshū and Shikoku, but this is no longer the case at present. The sperm whale is found in the Pacific, and the authorities are now encouraging our whalers to start open sea whaling in competition with the foreign whalers. The principal whaling grounds in our seas are Arikawa in Nagasaki, Yobuko in Saga, Senzaki in Yamaguchi, Tsuro and Ukitsu in Kōchi. The capture of whales in these four prefectures recently was as follows:—

Year.	Nagasaki.		Saga.		Yamaguchi.		Kōchi.		Total.	
	No.	Value. *yen.*	No.	Value. *yen.*	No.	Value. *yen.*	No.	Value. *yen.*	No.	Value. *yen.*
1893... ...	49	71,957	15	24,650	20	29,400	20	23,122	104	149,129
1894... ...	34	60,885	22	38,000	20	33,200	21	38,164	107	260,249
1895... ...	54	125,953	18	37,350	33	41,120	32	44,022	137	248,445
1896... ...	49	107,563	14	48,530	34	70,590	47	52,214	144	283,397
1897... ...	50	154,424	10	27,620	35	89,050	25	33,978	115	191,500
Average ...	47	104,156	16	35,230	28	52,672	31	38,300	121	226,544

2. The Sea-Otters and Fur-Seals.—The sea-otters that were formerly caught in the Kuriles are now practically extinct, and the other haunt the northern Pacific and the Sea of Japan while they are on their way to their northern home in summer. Formely there were rookeries of fur-seals in some islands of the Kuriles and the animal fell mostly into the hands of foreign sealers. Of late owing to the encouragement given by our Government, the capture of these valuable fur animals by our fishermen has become quite satisfactory :—

Year.	Sea Otter. No.	Fur Seal. No.	Total.
1897	26	4,616	4,642
1898	21	4,757	4,778
1899	16	6,518	6,534
1900	11	7,533	7,544
1901	12	7,045	7,057
Average	17	6,094	6,111

In Japan the otter skin commands the market of above 1,000 *yen* a piece while that of the other is about 25 *yen*.

V. THE FINANCIAL STANDING OF THE FISHERMAN.

General Remarks.—The only data available for making inquiries into the extent of our fishermen's investments in boats and nest are those of 1891. According to the result of that year's inquiries the investment amounted to 24,400,000 *yen* approximately, which,

Total Investments.

distributed among 900,000 fishing families, corresponds to only about 27 *yen* per family. There are other fishing gear besides, but they are comparatively of small value so that the means which our fishermen have at their disposal must be said to be extremely limited. Below is a table giving the number and value of fishing boats and nets:—

Number and Value of Boats and Nets.

	Fishing-boats.		Nets.	
	No.	Value (*yen*).	No.	Value (*yen*).
Honshu	222,942	5,246,974	813,046	2,715,722
Shikoku	29,422	722,471	27,601	1,034,550
Kyūshu	72,378	2,106,847	78,164	6,508,054
Hokkaidō	52,301	1,584,450	249,848	4,481,985
Total	377,043	9,660,742	1,168,659	14,740,311

Such is the economy of our fishing people, but it is evident that it admits of great improvement if they are encouraged to lay by their earnings against the bad times that must necessarily occur from time to time in their business, and if they are further encouraged to make continuous improvements in their methods of fishing.

Finanical Condition of Fishery in Hokkaido.—Perhaps in no part of the country are such improvements more imperatively necessary than in Hokkaidō. About 550 years have elapsed since the south-western corner of that island was first opened by the settlers from Ėchizen. The fishery in Hokkaidō was at that time a primitive affair, principally owing to the remoteness of the place from any of the markets, and also owing to the fishermen's ignorance of the best way of disposing of the fish caught. Owing, however, to the introduction of the manufacture of guano on the one hand and to the invention of pound-nets on the other, a strong impulse was imparted to the development of the industry, and this resulted in a striking increase in the export of marine products to Japan proper. On the abolition of the local feudal office in Hokkaidō and the establishment of the Colonial Office in 1869 to take its place, the fishing monopoly formerly given to only a few privilegeed fishermen was done away with, and at the

Official Patronage.

same time the excis duty stations were abolished. All the fishermen were allowed to engage in the fishery, and the Government adopted, moreover, a certain arrangement for advancing loans at a low rate of interest to the fishermen, with the object of encouraging the business and also of attracting to the island settlers from other parts of the country. The discontinuation of this loan system on the abolition of the Colonial Office and the inauguration of the local administration system placed the fishermen in an embarrassing situation. Even at present they are obliged in order to obtain their woking funds, to have resource to loans at exorbitant rates of interest, and often they have to pledge beforehand the anticipated catch of the season. Under the circumstances, the lion's share of the profits coming from the fishery goes into the pocket of money-lenders, and it is hardly possible to expect the development of the industry while things continue in this condition.

Dependant Condition of Fishermen.

Economy of Herring Fishery. The number of nets used and the number of capitalists engaged in the herring fishery in Hokkaidō are as follows :—

Year.	Nets.			Fishermen.			
	Pound-Nets.	Gill-Nets.	Other-Nets.	Pound-Nets.	Gill-Nets.	Seines.	Total.
1895	5,088	298,080	279	2,920	10,445	229	13,594
1896	5,099	280,800	314	2,801	10,045	203	13,049
1897	6,161	304,920	315	3,020	11,201	230	14,451
1898	6,302	361,440	341	3,404	12,261	246	15,901

No reliable data about the proceeds and investments of fishery exist, the only returns available for the purpose being those on the proceeds and taxes. These data are as follows :—

(Inquiries based on 86 fishing guilds out of the 124 existing in Hokkaidō.)

	yen.
Proceeds	7,216,359
Taxes and Public Burdens	391,882
Fishery Tax	274,801
Sundries Incidental to Paying Taxes	21,505
Guild Expenses	39,541
Village Expenses	56,034

The rate per capita of 39,259 members of the guilds is as follows :—

	yen.
Proceeds	183.00
Taxes	9.98

For obtaining so much proceeds the fishermen required funds amounting to about 9,300,000 *yen*. This is based on the estimate that the sum of 9 million *yen* is used on account of consolidated and working funds, exclusive of the sum required on account of public burdens; and on the estimate that the former form about a third of the sum, and the other the remaining two-thirds. The working funds amounting to 6 million *yen* are generally obtained by loans, and this view has been borne out by the inquiries made into accounts of 88 guilds out of the total 124. The result of the inquiries was as follows:—

FISHERY FUNDS.

	yen.
Funds Comings out of the Fishermen's own Pockets	4,333,767
Funds Obtained by Loans...	5,369,926
Loans from the Guilds	2,590,396
Loans from Capitalists Engaged in other Lines of Business in Hokkaidō	2,287,224
Loans from other Parts of Japan	492,304
Total...	9,703,693

The following estimates show the accounts of the capital required for one set of pound-net used in the herring fishery:—

		1st class. *yen.*	2nd class. *yen.*	3rd class. *yen.*	4th class. *yen.*
Consolidated Funds.	Nets, Boats, Tools, etc.	2,500	2,626	2,500	3,081
	Construction of Boats and Ships...			1,500	
	Purchase of one Fishing ground...			500	4,319
	Buildings			1,500	
	Deposits for Ground Leased ...	455			
	Total	2,955	2,626	10,500	7,400
Working Funds.	Rent of Fishing-Ground	528	528		
	Wages	2,168	2,168	2,310	2,310
	Food				
	Fuel				
	Repairs...				
	Sundries				
	Total	2,696	2,696	2,310	2,310
	Grand Total	5,651	5,322	12,810	9,710

The capital required by every 100 gill-nets used in the herring fishery is estimated as follows:—

		1st class. *yen.*	2nd class. *yen.*	Average. *yen.*
Consolidated Funds.	Nets	300	700	625
	Other Gear	100		
	Boats	150		
	Total	550	700	625
Working funds.	Wages...	385	600	650
	Food	70		
	Fuel	40		
	Ropes, Mats etc.	55		
	Rent of Curing-Grounds ...	150		
	Total	700	600	650
	Grand total	1,250	1,300	1,275

The herring fishery business is, as circumstances stand at present in Hokkaidō, placed in a disadvantageous situation, for during the fishing season which lasts for only two or three months, laborers have to be engaged at comparatively higher rate of wages than they ordinary receive, in addition to which they are to be fed at the expense of employers. Money being very urgently needed and very scarce, the rate of interest demanded is generally exorbitant as shown in the following table:—

Year.	Average rate in Tokyo and Osaka.	Average Bank rate at Hakodate and Osaka.	Average Interest for a Loan of over 1,000 *yen.*				
			On Negotiable Security.	On Real Estate.	On Marine Products.	On Boats.	On Credit.
	%	%	%	%	%	%	%
1895	9.7	12.6	11.6	12.2	12.2	16.4	12.0
1896	9.7	11.0	10.6	11.3	10.9	15.6	10.7
1897	9.9	11.7	11.1	11.8	11.4	12.8	11.1
1898	11.2	12.8	—	—	—	—	—
1899	9.8	11.3	—	—	—	—	—
Average ...	10.1	11.9	11.1	11.8	11.5	14.9	11.3

If the funds required demand such high rate of interest, the process of curing fish adopted in Hokkaidō is similarly beset with disadvantages. The kettles used in the process do not, for instance, admit of the use of coal. Fagots, far more costly than coal, have to be used, and of course the business of manufacturing marine products leaves therefore only a narrow margin of profit. If, however, the Hokkaidō fishermen were able to procure cheaper money for their consolidated capital and were able to devise at the same time some means of curtailing the working expenses and cost of production, and if on the other they were to inaugurate a new departure in the manufacture of smoked or salted marine products suitable for the foreign market, the industry would be sure to be attended by far greater prosperity than it is at present.

VI. AQUICULTURE.

Principal Fish Reared.—Aquiculture is now extensively carried on both in fresh water and in the sea. In fresh water, the raising of carp, snapping turtle, trout, grey mullet, and eel, are most important enterprises, while in the sea the culture of oyster, clams, and the "*Amanori*" is regarded as being the most profitable. In the case of carp and turtle the culture begins with the egg, while in that of grey mullet and eel the fries are let in the rearing-pond. In artificial fecundation of oyster and pearl-oyster (avicula), different kinds of collectors are placed in the water to obtain the spats. In the cultivation of the "Amanori" (*Porphyra*) fascines are used to furnish the proper place for the attachment. The inland seas near Tokyo and Hiroshima are noted for this culture of the algae.

Area and Condition of Hatching Beds.—The following table shows the area of ponds and beds of aquiculture and the value of the fish artificially cultivated:—

		Honshu.	Shikoku.	Kyūshu.	Hok'dō.	Total
Snapping Turtle.	area (*tsubo*).	13,112	—	219,094	—	232,206
	value (*yen*).	7,698	—	647	—	8,345
Oyster	„ („)	1,397,246	18,837	193,107	—	1,609,190
	„ („)	98,266	100	23,700	—	122,066
Carp...	„ („)	7,063,855	364,519	321,589	1,650	7,751,613
	„ („)	212,114	821	2,375	245	215,555
Crussian Carp...	„ („)	3,348,132	118,015	65,197	—	3,531,344
	„ („)	4,813	72	742	—	5,627
Eel	„ („)	1,461,283	115,000	475	—	1,810 693
	„ („)	40,248	18	76	—	40,342
Porphyra... ...	„ („)	1,527,244	—	283,450	—	1,810,694
	„ („)	158,799	—	11,408	—	170,207
Others	„ („)	10,119,947	73,882	3,098,349	—	13,292,178
	„ („)	155,640	486	26,621	8	182,755
Total ...	„ („)	24,930,819	690,253	4,181,261	1,650	29,803,983
	„ („)	677,578	1,497	65,569	253	744,897

Many hatcheries of salmon and trout exist in Japan, and of these the Government Chitose hatchery in Hokkaidō is the largest. Recently over 10 million salmon fries were hatched at this hatchery. In Hokkaidō there are many private salmon hatcheries, and the liberation of the fry is being extensively carried on. In the northern districts of Honshu, *i. e.*, in the prefectures of Niigata, Akita, and Aomori, salmon hatcheries may be found in many places. The number of salmon fry liberated in those districts are as follows:—

Year.	Chitose (Hokkaidō).	Niigata-ken.	Akita-ken.	Total.
1892	3,626,415	—	—	3,526,415
1893	7,355,640	—	—	7,355,640
1894	2,700,729	—	—	2,700,729
1895	8,549,598	—	—	8,540,598
1896	6,984,178	—	404,989	7,389,167
1897	3,815,588	—	368,952	4,184,540
1898	7,881,222	—	339,466	8,220,688
1899	10,453,486	2,752,145	168,756	13,374,387
1900	10,190,355	2,854,197	334,394	13,378,946
1901	12,665,214	4,330,992	340,000	17,336,206

The rearing of trout is also carried on in many places throughout the country.

VII. SALT-REFINING.

In Japan Proper.—The salt used in Japan is mostly derived from sea-water, from which it is extracted either by means of the sun's heat alone or by sun's heat supplemented by artificial heat. The mineral salt produced in Japan is hardly worth mentioning, it being extremely small in quantity.

The refining business dates back for more than 20 centuries, for the natural advantage enjoyed by Japan in the manufacture of this essential ingredient of food enabled our people to carry on the business almost everywhere. At present the work is carried on in no less than 34 prefectures besides Formosa, and the people engaged in the business number over 100,000. The output differs according to the year, but on an average it reaches about 6 million *koku*. Here is a table giving statistics with regard to industry:—

Number of People Engaged.

Year.	Area of Field. *cho.*	No. of Kettles.	Output. *koku.*	Output. *yen.*
1891	7,442.3	16,795	5,507,097	4,075,742
1892	7,483.6	17,293	5,655,795	3,584,093
1893	7,600.1	17,010	6,649,263	3,659,353
1894	7,721.5	17,144	6,325,891	3,483,078
1895	7,507.0	16,253	5,995,052	3,866,674
1896	7,578.3	16,547	5,235,024	7,620,616
1897	7,841.3	18,452	6,178,094	10,104,771
1898	7,906.8	19,075	6,364,979	8,218,514
1899	7,639.8	16,188	5,811,021	7,542,942
1900	7,774.2	17,584	6,591,078	9,388,694

The districts bordering on the Inland Sea produce about eight-tenths of the whole output produced in Japan proper, Kyūshu produce one-tenth approximately, and the rest the remaining one-tenth.

In Formosa.—In Formosa this industry promises to become far more prosperous than in Japan proper, owing to the greater

natural advantages enjoyed by it in this connexion. The figures for the two years specified are given below:—

Year.	Area (*cho*).	No. of Person Engaged.	Output (*koku*).
1898	168	1,122	19,726
1899	260	1,336	132,337

It may be added that the industry in that island has had a remarkable development since 1899, though the precise figures in the late years are not yet forthcoming. Salt is now a state monopoly in the island whence an enormous quantity is shipped to Japan proper.

Natural Heat System.

Refining Processes.—Of the two methods of refining the natural heat system is extensively adopted in Formosa. This process does not practically differ from that seen in some Western countries. To give a brief description of it a circular embankment enclosing a certain empty space is first constructed in the shoal. The space within this embankment is divided into two sections, one being used for concentrating the brine and the other for crystallization. The sea-water is first led into the concentration pond, where it is left to evaporate. After the proper degree of evaporation has been reached, it is next led into the crystallization pond. On further evaporation the salt contained in the water deposits itself on the sand. These deposits are then raked off and conveyed to a store-house. In some parts of northern Formosa a method resembling very much that adopted in Japan proper is followed.

Artificial Heat Systems.

There are two methods of extracting salt by artificial heating from the sea-water, one being called "Agehama" (up-shore style) and the other "Irihama" (in-shore style). The latter is far more popular than the other, and indeed about 90 per cent. of all the salt produced in Japan proper is produced by the "in-shore style." This style resembles very much the Formosan style. First a suitable plot is marked out on the beach on the occasion of the ebb-tide and is enclosed by embankments. When the sea-water which is let into the plot, has sufficiently evaporated, that is, has evaporated to such an extent as to

cause it to deposit the saline matter it contains, the deposits are collected and transferred to a box-shaped vessel made of either mud or wood. Sea-water is then poured upon the vessel and the thick saline liquid thus obtained is kept in a reservoir, to be afterwards heated in a kettle and evaporated. Sometimes the vessed is dispensed with, and in place of it a basket and a receptacle, generally a pail, are used. This style is commonly used in the salt-fields along the shores of Tokyo Bay.

In the "Up-shore system," the sea-water is sprinkled repeatedly on the shore up the beach; the sand charged with saline ingredients is put into a suitable vessel on which a quantity of sea-water is poured. A thick brine is thus produced and on its being heated, the evaporation causes the salt held in suspension to be deposited.

As the salt industry carried on in Japan was regarded as imperfect in several respects, the Government caused the matter to be inquired into some years ago, and at last in 1898, a model salt refinery was established at Tsudamura, Chiba-ken, and another at Matsunaga, Hiroshima-ken.

VIII. MARKETS.

(A). HOME MARKETS.

General Remarks.—As already mentioned in the preceding sections, the gross value of catch of fish in Japan is estimated at about 60 million *yen* a year. Of the manufactured marine products, the dried bonito, guano, salted or dried fish and shell-fish, and sea-weeds are principally consumed at home.

Volume of home consumption.—It is not possible to estimate with anything like accuracy the gross quantity and the value thereof of fish and marine products consumed at home either fresh or in a cured form. However as 8 million *yen* worth of manufactured products out of the total 28,900,000 *yen* is exported abroad, the consumption at home may be roughly estimated at 20,900,000 *yen*, broadly divided as follows:—

	yen.
Dried Bonito and Substitutes	3,464,415
Guano	9,029,457
Dried or Salted Fish or Shell-Fish	8,430,200
Sea-Weeds	1,311,161

I. RAW-FISH MARKETS.

General Remarks.—Data are not available as to the amount of fish, etc. consumed in a fresh state, but that this comes up to a large amount admits of no doubt, in view of the great extension of the market recently owing to the improvement of the means of communication. Raw fish come even from Korea to some parts of Japan. Some idea as to the quantity of raw fish consumed at home may be obtained from the statistics of our principal fish-markets. The following gives the value of the raw fish that were sold in those markets in 1896 :—

	yen.
Tokyo	3,708,896
Ōsaka	1,479,985
Atsuta (Nagoya)...	473,865
Hakata...	220,385
Shimonoseki	169,152

The condition of delivery and distribution were as follows at those markets :—

TOKYO (1900).

Imports.			Exports.		
Value.	Delivery.		Value.	Distribution.	
yen. 3,708,896	Bōshū	43%	*yen.* 3,708,896	Tokyo	80%
	Sagami...	7·9%			
	Izu	12.0%			
	Suruga	12.0%			
	Kazusa...	4.9%			
	Mito and Chōshi ...	12.0%			
	Hokkaidō and San-Riku	8.2%		To provinces	20%

ŌSAKA (1901).

Imports.			Exports.		
Value.	Delivery.		Value.	Distribution.	
yen. 1,479,985	Kishū	25%	*yen.* 1,479,985	Ōsaka and suburbs	95%
	Shikoku	20%			
	Chūgoku	20%			
	Kyūshu	20%		Yamato	4%
	Near Shores	6%			
	Izumi	6%			
	Korea	3%		Kyoto	1%

ATSUTA (1896).

yen. 475,865	Miye	25%	*yen.* 131,238	Nagoya	10%
	Shizuoka	10%		Gifu	30%
	Chiba	7%		Shiga	30%
	Fukui	5%		Kyoto	20%
	Ōsaka	8%		Nagano	20%
	Near Shores	35%			

HAKATA (1896).

yen. 220,385	Korea	20%	*yen.* 179,083	Kumamoto	30%
	Nagasaki	40%		Ōsaka, Yamaguchi	10%
	Near Shores	40%		Saga, Ōita	10%
				Fukuoka	50%

SHIMONOSEKI (1896).

yen. 169,152	Nagasaki	40%	*yen.* 161,547	Ōsaka	25%
	Satsuma	10%		Kyoto	30%
	Tsushima	10%			
	Hirado	15%		Okayama	15%
	Karatsu	5%			
	Wakamatsu	10%		Buzen	10%
	Near Shores	5%			
	Gotō	5%		Iyo	20%

The market price necessarily differs according to locality, but some ideas on this point may be gathered from the following quotations :—

AVERAGE PRICE, (*yen*) PER 10 *kwam.* (1901.)

	Pagrus.	Tunny.	Scomgero-morus.	Halibut.	Mackerel.	Bonito.	Sardine.	Grey Mullet.	Yellow-Tail.
Tokyo	15	11	9	9	7	8	—	—	6
Ōsaka	22	9	11	17	8	10	6	8	9
Shimonoseki	15	10	14	11	9	8	5	8	9
Yonago	9	—	13	4	4	—	3	6	10
Atsuta	18	13	18	10	—	—	—	—	7
Average	16	11	13	10	6	9	5	7	8

The market shows the upward tendency owing to the greater demand, as shown from these figures based on the market in Ōsaka :—

Year.	Amount Delivered.	Sale by Whole-sale Dealers.	Sale by Middlemen.
	yen.	*yen.*	*yen.*
1892	1,552,650	607,915	202,436
6897	1,241,654	1,379,615	459,422
1901	1,479,985	1,655,538	551,294

MARKET PRICE OF RAW FISH PER 10 *kwam.*

	1892.	1897.	1901.
	yen.	*yen.*	*yen.*
"Tai" (Pagrus)	15.00	18.00	20.00
Tunnies	6.00	7.50	8.50
Yellow-Tail	7.50	8.50	9.50
Bonito	6.30	8.50	9.50
Shark...	4.80	5.50	6.50
Lobsters and Prawns	7.50	9.00	11.00

II. CURED FISH MARKETS.

Of the cured marine products the "Fushi" is the most important, this being a dried flesh of various kinds of fish and extensively used for cooking purpose throughout the country.

"FUSHI."—There are several kinds of the *Fushi* (dried and smoked fish just like dried bonito), these being bonito *Fushi*, tunny *Fushi*, mackerel *Fushi*, and *Fushi* made of miscellaneous fish. The principal centres of bonito *Fushi* and their output in 1900 were as follows :—

	Output. *kwam.*	Value. *yen.*
Shizuoka	343,598	702,961
Chiba	303,574	675,591
Miye	221,879	868,047
Kagoshima	189,111	323,038
Fukushima	183,352	448,212
Kōchi	159,847	584,702
Ibaragi	108,428	255,177
Others	462,671	1,023,575
Total...	1,972,460	4,881,303

Places and output in 1900 of tunny *Fushi* were as follows :—

	Output. *kwam.*	Value. *yen.*
Miyagi	49,384	83,502
Ehime	39,470	81,432
Kagoshima	20,475	20,906
Iwate	13,238	17,617
Wakayama	12,322	20,147
Others	29,606	65,206
Total	164,495	288,809

The principal markets of *Fushi* are Tokyo and Ōsaka. The delivery and distribution in the two places were as follows in 1896 :—

TOKYŌ.

Imports.				Exports.			
Quantity. *kwam.*	Value. *yen.*	Percentage of Delivery.		Quantity. *kwam.*	Value. *yen.*	Percentage of Delivery.	
617,244	1,230,593	Kōchi	3%	617,244	1,230,593	Tokyo	23.0%
		Kagoshima ...	18%			Gumma ...	10.0%
		Shizuoka ...	14%			Nagano ...	12.9%
		Chiba	30%			Kanagawa ...	9.5%
		Ibaragi	7%			Yamanashi ...	9.5%
		Miyagi	16%			Ōsaka	9.4%
		Iwate	12%			Kyoto ...	5.3%
						Okayama ...	5.8%
						Nagasaki ...	4.2%
						Hiroshima ...	6.3%
						Miye ...	2.9%
						Hyogo	0.9%
						Ōita	0.3%

ŌSAKA.

224,058	454,822	Kōchi	25%	724,058	468,490	Tokyo	10%
		Kagoshima ..	15%			Ōsaka	25%
		Ehime	10%			Kyoto	15%
		Ōita	5%			Shiga	10%
		Miye	10%			Okayama ...	25%
		Wakayama ..	10%			Hiroshima ...	
		Chiba	25%			Shimane ...	
		Miyagi				Tottori	
		Iwate				Fukushima ...	
		Fukushima ...				Kumamoto ...	
						Niigata	15%
						Toyama ...	
						Ishikawa ...	

III. FISH-FERTILIZERS.

Output and kinds of Fish-Fertilizers. — The principal centres of fish guano and their output are as follows :—

HERRING (1900).

	Quantity. *kwam.*	Value. *yen.*
Hokkaidō	5,725,620	1,197,385
Others	24,171	6,947
Total	5,749,791	1,204,332

GUANO (Herring and Sardine).

	Quantity.	Value.
	kwam.	*yen.*
Hokkaidō	22,936,920	5,806,765
Aomori	1,049,517	328,472
Chiba	876,030	424,254
Aichi	492,483	169,860
Total	25,354,950	6,809,351

DRIED ANCHOVY.

	Quantity.	Value.
	kwam.	*yen.*
Chiba	2,220,052	554,510
Shizuoka	569,322	30,270
Nagasaki	423,402	95,864
Kanagawa	250,400	429,800
Others	1,019,842	289,875
Total...	4,483,018	1,400,319

The conditions of the delivery and distribution of fish-fertilizers on the markets of Tokyo, Ōsaka, and Hyogo were as follows in 1900:—

TOKYO.

Value. *yen.*	Percentage of Delivery.		Value. *yen.*	Percentage of Distribution.	
2,997,659	Hokkaidō	74%	2,862,845	Tokyo...	21.2%
	San-Riku	10%		Chiba	17.7%
	Near-Shores	16%		Ibaragi, Tochigi .. Gumma, Miyagi ..	30.2%
				Nagano, Yamanashi Kanagawa, Shizuoka, Aichi, Miye	28.8%
				Others	2.1%

ŌSAKA.

Value. *yen.*	Percentage of Delivery.	
2,546,895	Hokkaidō	91%
	Others	9%

Value. *yen.*	Percentage of Distribution.	
2,599,690	Ōsaka	33%
	Wakayama	4%
	Kyoto and Hyogo ...	10%
	Shikoku	3%
	Shiga	47%
	Eastern and western districts	3%

HYOGO.

622,264	Hokkaidō	41%
	Others	59%

751,618 Shikoku and others.

Demand on fish-fertilizers.—The market of fish-fertilizers has lately gone up to a marked degree owing to the fact that the supply has not kept pace with the demand which went on advancing. This inequilibrium between supply and demand is due to the fact that in consequence of the greater improvement of facilities of transportation, and the better means of sending raw fish to the market, it is now found more profitable to sell fish as raw fish instead of selling it as fertilizer. To fill the gap thus occasioned in the supply of fish-fertilizers a large quantity of bean-cakes has began to arrive in Japan from North China. The following table will show the movement of our fish-fertilizers and of Chinese bean-cakes during the ten years ending 1900 :—

Year.	Home-Made Fish Fertilizers.		Chinese Bean-Cakes.	
	Quantity. *kwam.*	Value. *yen.*	Quantity. *kwam.*	Value. *yen.*
1891	34,070,628	4,914,188	4,116,592	350,816
1892 ..	27,060,892	4,529,733	13,139,440	821,215
1893	41,223,382	6,715,672	9,472,480	592,030
1894	45,696,433	7,214,107	8,456,560	816,910
1895	44,679,571	7,403,519	6,668,624	939,948
1896	38,236,862	7,861,932	26,206,048	3,212,931
1897	49,183,932	10,515,196	27,223,760	3,311,712
1898	33,503,946	7,561,334	33,572,128	4,610,625
1899 ...	38,880,241	9,546,054	41,864,080	6,047,238
1900	36,380,034	9,662,768	32,101,376	4,540,825
Average ...	38,891,592	7,592,450	20,282,109	2,524,415

IV. DRIED OR SALTED FISH.

Output and kinds of Dried or Salted Fish.—The quantity of dried or salted fish going abroad is as yet insignificant, and they may be regarded as being practically all consumed at home. The places where the principal products of this kind are produced and the output thereof are shown below:—

DRIED ANCHOVY.

	yen.		*yen.*
Miye	208,852	Ehime	126,628
Aichi	91,024	Others	515,099
Total			941,603

SALTED SARDINE.

	yen.		*yen.*
Miye	168,672	Kagoshima	79,659
Aichi	164,843	Others	204,088
Total			617,263

SALTED MACKEREL.

	yen.		*yen.*
Kochi	105,221	Chiba	47,337
Fukui	92,611	Others	311,138
Total			556,357

SALTED SALMON.

	yen.		*yen.*
Hokkaidō	482,000	Others	41,335
Total			523,335

SALTED YELLOW-TAIL.

	yen.		*yen.*
Kagoshima	113,444	Toyama	70,500
Kōchi	76 100	Others	173,854
Total			435,898

"TATSUKURI" SARDINE.

	yen.		*yen.*
Miye	27,641	Ibaragi	26,686
Ishikawa	27,580	Others	195,178
Total			277,085

BOILED AND DRIED SARDINE.

	yen.		*yen.*
Yamaguchi	321,400	Hiroshima	245,964
Ehime	298,322	Shizuoka	233,949
Aichi	257,914	Others	781,229
Total			2,138,777

DRIED COD.

	yen.		*yen.*
Ishikawa	18,324	Others	11,451
Niigata	102,000		
Total			131,775

SALTED COD.

	yen.		*yen.*
Hokkaidō	43,542	Others	12,109
Total			55,651

SALTED TUNNY.

	yen.		*yen.*
Aomori	16,900	Hokkaidō	12,143
Nagasaki	12,244	Others	37,721
Total			79,008

V. SEA-WEEDS.

Output and kinds of cured Sea-weeds.—Of the sea-weeds the *Kombu* (Laminaria), and a few others are exported to some extent, but by far the greater part is consumed at home.

"KOMBU" (*Laminaria*).

	yen.		*yen.*
Hokkaidō	562.234	Others	40,543
Total			602,777

"HOSHINORI" (*Porphyra*).

	yen.		*yen.*
Tokyo	251,019	Others	262,928
Total			513,947

"TENGUSA" (*Gelidium*).

	yen.		*yen.*
Tokyo	43,380	Miye	27,082
Shizuoka	40,502	Others	108,691
Hokkaidō	38,650		
Total			258,305

(B.) FOREIGN MARKETS.

I. Exports.—The value of marine products exported during 1901 amounted to 8,680,000 *yen* approximately. The returns during the last ten years are as follows, the quantity being put in *kin* and the value in *yen*:—

		1892. unit of thousand.	1893. unit of thousand.	1894. unit of thousand.	1895. unit of thousand.	1896. unit of thousand.
Cuttle-fish	Quan.	7,480	10,356	9,483	6,401	5,842
	Val.	980	1,426	1,162	996	1,251
Beche de mer	„	865	840	929	1,021	915
	„	291	281	294	316	319
Shark Fins...	„	226	283	297	309	323
	„	80	101	102	95	110
Salmon, Cod	„	1,295	1,750	1,344	1,380	705
	„	64	85	66	64	40
Dried Anchovy	„	715	827	273	507	329
	„	23	25	10	18	14
Dried and Salted Fish ...	„	782	617	911	993	947
	„	24	21	46	30	31
Prawns...	„	1,427	1,404	1,283	1,535	1,356
	„	190	208	171	222	209
Ear-shell	„	1,101	1,021	1,165	1,060	985
	„	381	396	445	396	408
Mussel	„	370	336	218	316	245
	„	30	27	21	32	26
Solecurtus Constricta	„	—	—	—	—	356
	„	—	—	—	—	56
Adductor muscle of shell-fish	„	179	325	541	156	333
	„	52	82	127	39	93
Oyster (dried)	„	—	—	—	—	226
	„	—	—	—	—	27
Other Shell-fish	„	—	—	—	—	228
	„	82	98	70	85	17
"Kombu" (*Laminaria*) ...	„	36,713	32,718	35,851	39,033	29,174
	„	818	766	467	514	486
Sliced "Kombu"	„	6,498	6,935	5,999	5,796	5,770
	„	175	172	139	116	122
"Tosakanori" (*Rhodophyllis sp.*)	„	257	225	155	277	183
	„	9	9	8	11	10
"Amanori" (*Porphyra Vulgaris*)	„	—	—	—	—	—
	„	4	6	5	5	9
"Kanten" (Colle Vegetable)	„	1,269	1,452	1,298	1,118	1,403
	„	581	682	495	449	995
Fish-oil	„	7,357	13,751	16,668	2,654	6,175
	„	248	533	668	525	338
Mother of Pearl (Haliotis)...	„	835	783	767	759	853
	„	59	60	50	63	88
Coral	„	1	—	—	1	4
	„	37	46	48	36	88
Salt	„	16,832	19,169	16,100	24,687	25,897
	„	82	86	68	97	132
Total	„	—	—	—	—	—
	„	4,219	5,115	4,470	4,120	4,381

		1897.	1898.	1899.	1900.	1901.	Average.
Cuttle-fish	Quan.	7,093	6,046	6,390	5,191	8,798	7,308
	Val.	1,413	1,268	1,362	1,158	1,842	1,276
Beche de mer	„	799	760	945	668	1,005	875
	„	296	291	362	279	436	316
Shark fins	„	347	363	390	360	388	329
	„	131	134	146	130	144	117
Salmon, Cod	„	895	1,413	1,178	1,206	2,536	1,370
	„	56	82	72	87	176	79
Dried anchovy	„	266	273	704	1,788	2,106	779
	„	13	15	35	92	106	135
Dried and Salted fish... ...	„	461	390	598	807	1,857	836
	„	18	27	66	73	162	50
Prawns...	„	1,391	1,563	1,276	1,150	1,681	1,407
	„	215	270	251	232	339	230
Ear-shell	„	907	1,035	1,115	850	856	1,010
	„	396	466	530	429	483	433
Mussel...	„	165	216	288	320	337	281
	„	20	32	46	52	52	34
Solecurtus Constricta	„	292	179	99	90	135	115
	„	41	28	20	17	26	19
Adductor muscle of shell-fish	„	350	179	298	368	452	318
	„	122	69	107	140	204	104
Oyster (dried)	„	148	136	136	159	202	100
	„	18	21	20	27	39	15
Other Shell-fish	„	172	187	289	175	265	131
	„	17	22	32	27	32	48
"Kombu" (*Laminaria*) ...	„	40,357	33,431	39,666	30,988	51,526	36,946
	„	726	549	780	730	1,092	693
Sliced "Kombu"	„	4,757	6,342	6,530	5,053	9,383	6,306
	„	104	161	166	152	325	613
"Tosakanori" (*Rhodophyllis sp.*)	„	95	104	137	137	114	168
	„	5	5	6	6	5	7
"Amanori" (*Porphyra Vulgaris*...	„	—	—	—	—	—	—
	„	4	4	13	12	8	7
"Kanten" (Colle Vegetable)	„	1,326	1,205	1,207	1,444	1,584	1,331
	„	591	611	674	964	1,217	686
Fish-oil	„	12,657	6,641	9,182	12,646	14,610	2,134
	„	618	391	550	906	1,023	580
Mother of Pearl (Haliotis)...	„	954	755	798	511	439	745
	„	135	172	175	109	100	101
Coral	„	10	9	21	30	47	12
	„	187	169	345	354	564	187
Salt	„	36,887	29,511	39,062	50,354	38,219	29,672
	„	300	215	278	452	303	201
Total	„	—	—	—	—	—	—
	„	5,437	5,013	6,046	6,440	8,686	5,393

A brief description of principal marine products for export will be given in the following paragraphs :—

1. Cuttle-fish.—There are three kinds of cuttle-fish of commercial value, these being "Surume-ika" (*Ommastrephidae*), "Kabuto-ika" (*Sepia*) and "Kensaki-ika" (*Loligo*). The Sepia is generally used raw, and only the other two varieties, especially *Ommastrephidae*, are dried. The Sepia lives most in bays or inland seas while the other kinds are caught in Kyūshu, Sado and Oki in the Sea of Japan, and also along the coast of Aomori, Iwate, Miyagi and Hokkaidō. The dried cuttle-fish goes extensively to China, as shown in the following returns giving the average for the ten years ending 1901 :—

	kin.	*yen.*
Hongkong	6,044,123	1,071,078
China	1,186,606	190,606
Others	85,538	15,254
Total	7,316,267	1,276,938

2. Beche de Mer.—This is a boiled and dried sea-cucumber and is highly relished by the Chinese. Besides the Japanese product, that caught along the Siberian coast and the South Pacific also goes to China. The South Pacific variety is whitish and devoid of cutaneous projections, while the Beche de mer from Japan and Siberia is black and has projections. It is found mostly in Hokkaidō and along the north-eastern coast of Honshū.

Average yearly export during the said ten years was :—

	kin.	*yen.*
China	801,378	292,545
Hongkong	71,491	21,542
Others	2,430	2,883
Total	875,299	316,970

3. Shark-Fins.—Dried shark-fins are regarded as a dainty by the Chinese. There are two kinds of fins, grey and black, the grey commanding higher price than the other. The fins come in the largest quantities from Oita and Yamaguchi, and our fishermen also cross over to the Korean coast to fish for sharks or rather for their fins :—

	kin.	*yen.*
China	221,149	83,245
Hongkong	107,150	37,440
Others	12,871	7,238
Total	341,170	127,923

PRINCIPAL SALTED OR DRIED FISH THAT GO ABROAD.

(1). SALMON AND TROUT.

	kin.	*yen.*
Hongkong	1,335,741	77,538
China	12,468	609
Others	24,700	1,712
Total	1,372,909	79,859

(2). DRIED ANCHOVY.

	kin.	*yen.*
Hongkong	751,073	34,470
China	20,097	823
Others	10,626	525
Total	781,796	35,818

4. OTHER SALTED OR DRIED FISH.—Salted or dried fish, mostly in the latter form, that are exported abroad mostly go to Southern China. The *Tatsukuri* and cod constitute the bulk of the exports. Other fish of a cheap kind also go there. The recent advance in prices on the fish market stands very much in the way of the greater export of this kind of fish. An attempt is now being made to export salted herring and if this proves satisfactory salted herring will become an important item of export:—

	kin.	*yen.*
Hongkong	281,444	14,206
China	137,650	8,103
Hawaii	149,921	17,355
United States	17,587	2,336
Korea	237,194	6,771
Others	16,112	1,658
Total	839,908	50,429

5. Dried Prawns.—Several varieties of prawns belonging to the genus *Penaeus* are boiled and deprived of their shell, and these are known on the market by the common name of dried prawns. The prawns are mostly caught along the shores of the Inland Sea and also in Kyūshu. Dried prawns are mostly destined for China.

	kin.	*yen.*
Hongkong	780,552	128,257
China	590,307	91,503
Others	406,146	3,037
Total	1,777,005	222,797

6. Ear-Shell.—This is one of the most favorite marine products with the Chinese, and the export to America is to supply the demand of the Chinese residents there. An export trade has recently sprung up in tinned ear-shells, but the quantity exported is unknown.

	kin.	*yen.*
Hongkong	885,292	367,629
China	96,414	38,874
United States	24,104	13,991
Others	12,716	104,035
Total	1,018,526	426,976

7. Kainohashira.—This is the dried abductor muscle of the several varieties of scallop of the genus *Pecten*.

	kin.	*yen.*
Hongkong	158,749	51,056
China	152,141	50,197
Others	7,201	2,782
Total	318,091	104,035

8. Mussel.—This is the dried flesh of the "Seto-gai" caught in Yamaguchi, Ehime, Kumamoto, etc.

	kin.	*yen.*
Hongkong	263,335	32,454
China	199,510	21,211
Others	1,335	3,453
Total	464,180	57,118

9. HOSHIAGEMAKI (*Solecurtus constricta*, Lam.)—This shell-fish grows in the mud of Ariake Sea, Kyūshu. The flesh is boiled and dried.

FOUR YEARS' AVERAGE (1898—1901).

	kin.	*yen.*
Hongkong	19,592	3,399
China	106,598	19,632
Total	126,190	23,031

10. DRIED OYSTER.—The oyster exported in a dried form mostly comes from Akkeshi, Hokkaidō.

FOUR YEARS' AVERAGE (1898—1901).

	kin.	*yen.*
Hongkong	141,266	23,528
British India	6,704	1,245
Hawaii	6,500	1,312
Others...	4,035	1,000
Total	158,505	27,085

11. "HALIOTIS" SHELLS, 10 YEARS' AVERAGE (1890—1901).

	kin.	*yen.*
England	255,718	41,694
Hongkong	281,458	32,637
Germany	109,086	11,810
Others...	95,753	8,421
Total	742,015	94,562

12. "YAKO-GAI" (*Turbo obearins*, Lam.), 6 YEARS' AVERAGE (1892—1897).

	kin.	*yen.*
Hongkong	44,519	5,081
Others...	10,901	138
Total	55,420	5,219

OTHER SHELLS, 6 YEARS' AVERAGE (1892—1897).

	yen.
Hongkong	6,715
Germany	2,565
England	1,495
Others...	1,093
Total	1,869

The "Yako-gai" grows in the sea surrounding the Okinawa Islands Its shell and that of *Heliotis* and *Avicula* supply important materials for ornamental work.

13. "Kombu" (*Laminaria*).—Several varieties of *Laminaria* grow on the shores of Japan, especially in Hokkaidō and the south-eastern districts of Honshu. The "long Kombu" (*Laminaria augustata*) is exported most of all. The "Kombu" sliced into small threads is extensively used by our people and also to some extent by the Chinese. Shanghai is the principal market, whence the goods are sent to the districts along the Yangtsz. The export to northern China is not so great, owing to the fact that the goods produced in Siberia and Manchuria being somewhat cheaper than those from Japan are much in demand there.

"KOMBU."

10 YEARS AVERAGE (1892—1901).

"LONG KOMBU."

	kin.	*yen.*
China...	34,944,295	658,449
Hongkong...	1,484,198	27,137
Others	498,023	5,664
Total	36,926,516	691,250

SLICED "KOMBU."

	kin.	*yen.*
China	5,873,544	155,671
Hongkong	292,067	6,458
Others	140,891	1,654
Total	6,306,502	163,783

14. "KANTEN," (*Colle Vegetable*).—This is made by dissolving the sea-weed *Tengusa* in water. After the refuse is removed the gelatinous infusion is exposed to the cold weather at night and made to congeal. In the daytime this congealed substance is exposed to the sun to make it less watery. "Kanten" is consumed at home and is also exported abroad. The Chinese use it as food, while in the West it is used as a substitute of isinglass and for starching woven goods or for removing the sediments of liquors. The "Kanten" is produced at Ōsaka, Kyoto, Hyogo and Nagano.

10 YEARS' AVERAGE (1892—1901).

	kin.	*yen.*
Hongkong	578,482	292,683
China	543,819	286,140
British India	34,046	19,322
Germany	18,935	14,147
England	13,214	9,510
Others	88,395	43,000
Total	1,276,891	664,802

15. Other sea-weeds that go abroad are the "Hoshinori," "Tosakanori" (*Rhodophyllis*), "Funori" (*Cloiopeltis Agardh*) and "Tsunomata" (*Chondrus slackhouse, Agardh*); the first for Japanese staying abroad, the second to China and the other two to other countries to be used as paste:—

"HOSHINORI," 10 YEARS' AVERAGE (1892—1901).

	yen.
Hongkong	1,593
China	4,682
Hawaii...	482
Others...	687
Total	7,444

"TOSAKANORI," 10 YEARS' AVERAGE (1892—1901).

	kin.	*yen.*
China	164,873	7,505
Others	4,259	291
Total	169,132	7,796

"FUMORI," 10 YEARS' AVERAGE (1892—1901).

	kin.	*yen.*
England...	35,445	4,141
Hongkong	73,399	2,921
Others	950	81
Total	109,794	7,143

"TSUNOMATA," 10 YEARS' AVERAGE (1892—1901).

	kin.	*yen.*
China	29,337	4,036
Hongkong	2,749	1,202
Germany	715	499
Others	79	59
Total	32,880	5,796

16. FISH-OIL.—Fish-oil is a by-product of fish guano. It is shipped abroad in unrefined state, and is used for leathering, making soap, paint, tallow, etc :—

10 YEARS' AVERAGE (1892—1901).

	kin.	*yen.*
Germany	5,527,476	293,091
Hongkong...	1,731,359	95,402
England	1,514,026	61,767
Belgium	622,645	42,908
France	1,001,584	45,169
Australia	297,980	13,489
China...	250,618	10,705
Others	419,497	18,665
Total	11,365,185	581,196

16. CORALS.—Corals are got by dredge-nets in the seas off Tosa, Satsuma and Hizen. Italy is the principal foreign market for the goods. The supply being in excess of the demand lately, owing to the greater development of the work of dredging in Tosa and Satsuma, the market has somewhat declined :—

10 YEARS' AVERAGE (1892—1901).

	kin.	*yen.*
Hongkong	5,087	83,528
Italy	7,189	80,390
China	655	23,488
Others...	10	345
Total	12,941	187,751

17. TABLE-SALT.—Salt was formerly exported to Korea alone, but of late it has began to go to Siberia and Saghalien where it is used for preserving fish :—

10 YEARS' AVERAGE (1892—1901).

	kin.	*yen.*
Korea	17,719,697	196,618
Siberia...	11,484,059	102,405
Others...	467,438	2,747
Total	29,671,194	201,770

(II.) IMPORTS.—Imports of marine products during the ten years from 1892 to 1901 :—

(Quantity is represented in *kin* and value in *yen*).

		1892.	1893.	1894.	1895.	1896.
Dried	Quan.	—	—	—	—	—
	Val.	—	—	—	—	—
Salted-fish...	„	535,268	1,511,962	2,281,632	2,641,254	4,863,137
	„	12,064	44,203	63,197	107,144	231,035
Shell-fish	„	—	—	—	—	113,816
	„	—	—	—	—	30,818
Hank-bill Turtle Shell...	„	14,231	13,126	6,935	14,579	14,162
	„	60,160	70,755	46,062	80,798	107,722
Salt	„	—	—	—	—	—
	„	2,442	3,463	5,656	3,245	55,579
"Tengusa"	„	686,563	455,611	319,547	396,443	535,566
	„	29,153	19,990	12,128	16,462	24,669
Coral	„	3,082	4,622	2,108	3,239	5,640
	„	32,807	41,337	24,821	57,650	62,854
"Funori"		954,309	772,073	679,446	673,901	1,064,180
		8,831	31,358	27,798	30,360	48,323
Dried Anchovy	„	5,112,728	8,201,057	10,412,625	432,342	2,982,066
	„	92,293	156,189	193,636	8,561	62,685
Herring Guano	„	—	34,231	—	—	—
	„	—	759	—	—	—
Total	„	—	—	—	—	—
	„	270,751	368,054	373,298	304,220	623,684

		1897.	1898.	1899.	1900.	1901.	Average.
Dried-fish	Quan.	11,957	5,317	43,880	62,873	61,428	18,547
	Val.	455	292	2,292	3,197	3,484	972
Salted-fish	„	9,277,425	10,612,880	23,783,203	43,835,533	30,541,836	1,298,891
	„	495,907	609,736	1,212,896	2,184,846	1,442,790	640,382
Shell-fish	„	92,711	106,942	109,316	116,628	90,403	62,982
	„	26,838	33,365	35,311	43,907	36,343	20,658
Hank-bill Turtle Shell...	„	11,478	9,893	7,159	9,744	9,793	11,110
	„	81,203	99,025	68,654	79,527	69,227	76,013
Salt	„	—	—	—	—	—	—
	„	111,823	133,365	86,428	122,384	75,398	59,973
"Tengusa"	„	472,005	679,618	595,052	650,756	658,075	544,924
	„	20,853	29,058	33,517	37,106	38,814	26,175
Coral	„	5,345	7,472	2,726	2,384	1,640	3,826
	„	49,873	103,873	23,803	29,196	12,309	43,852
"Funori"...	„	957,917	969,083	829,133	1,202,543	1,372,232	947,482
	„	47,519	46,139	43,384	63,423	78,443	45,858
Dried Anchovy	„	12,555,023	5,300,613	2,500,706	6,986,981	7,516,014	6,200,016
	„	238,665	128,282	89,244	235,598	238,970	149,412
Herring Guano	„	—	—	17,505,000	26,909,800	28,063,200	7,251,228
	„	—	—	737,157	1,146,116	1,171,626	305,566
Total	„	—	—	—	—	—	—
	„	1,123,136	1,180,135	2,332,686	3,945,300	3,167,407	1,368,867

A brief description of the principal imported marine products will be given as follows :—

1. SALTED-FISH.—The most important variety of salted fish imported into Japan is salmon. It comes from Russian Siberia and

British Columbia and the United States of America, and generally from the Japanese fishermen who are doing business in those countries to a large extent.

10 YEARS' AVERAGE (1892—1901).

	kin.	*yen.*
Russian Siberia	11,713,498	566,851
United States	410,772	25,902
British Columbia	571,911	35,246
Others...	292,727	12,382
Total	12,988,908	640,381

2. FERTILIZERS.—Herring guano comes chiefly from Russian Siberia and dried anchovy from Korea, both through the hands of Japanese fishermen and merchants. Tho import was formerly free of duty, but in consequence of the enforcement by the Russian authorities of restrictive measures in regard to the fisheries conducted by Japanese fishermen along the Siberian coast, our Government passed some time ago a law imposing an *ad valorem* duty of not more than 50 per cent. on salted fish and guano coming from Siberia and Saghalien. The tariff has not yet been enforced owing to the relaxation of the Russian restrictive measure.

3. FISH-GUANO, 3 YEARS' AVERAGE (1899—1901).

	kin.	*yen.*
Russian Siberia...	24,159,333	1,018,300

4. DRIED ANCHOVY, 10 YEARS' AVERAGE (1892—1901).

	kin.	*yen.*
Korea	6,056,812	144,204
Russian Siberia	121,129	4,783
Total...	6,177,941	148,987

5. SEA-WEEDS.—The principal sea-weeds that are imported into Japan come from Korea where our fishermen are collecting the *Tengusa* and *Funori*.

"TENGUSA," 10 YEARS' AVERAGE (1892—1901).

	kin.	*yen.*
Korea	513,917	24,916
Others	31,007	1,259
Total	544,924	26,175

"FUNORI," 10 YEARS' AVERAGE (1892—1901).

	kin.	*yen.*
Korea	947,074	45,839

6. SALT.—The import was formerly confined to table-salt alone but owing to great rise in the salt market recently at home sal, has began to come largely from Germany, England, and China:—

Year.	England.	Germany.	China.	United States.	Others.	Total.
	yen.	*yen.*	*yen.*	*yen.*	*yen.*	*yen.*
1892	2,152	30	—	30	230	2,442
1893	2,355	57	—	989	62	3,463
1894	4,773	—	2	813	68	5,656
1895	1,598	—	—	945	702	3,245
1896	2,390	979	49,611	934	1,665	55,579
1897	4,124	18,299	74,841	3,526	11,033	111,823
1898	5,758	87,399	22,016	6,038	12,154	133,365
1899	2,060	23,660	50,396	2,708	7,604	86,428
1900	59,725	23,093	18	4,119	35,429	122,384
1901	69,158	3	3,205	3,032	—	75,398

IX. FISHERY LEGISLATURE.

GENERAL REMARKS.—Legislature and institutions pertaining to fishery are as yet comparatively imperfect, as these things have generally been regulated in accordance with ancient usages. This primitive method of regulations having given rise to various troubles the Government put in force from July 1902 the Law of Fishery. At the same times steps were taken for encouraging deep-sea fishery, and state aids have also been granted for the encouragement of fishery education. The matters will be briefly described below.

Usages and Legislature about fishery.—Various usages have existed about fishery-grounds. In general the grounds in the foreshores of fishing village or villages were regarded to belong to those villages. The inhabitants of farming villages situated along the sea shore did not in general care much about the grounds except perhaps for sea-weeds used as manure. The grounds in the foreshore of such villages were therefore left to the exploitation of neighboring fishing communities. With the increase of the fishing population and owing also to the fact that even farmers began to assert their own rights in regard to the foreshores, fishermen were compelled to extend their field to work even to grounds belonging to others, and this very frequently led to trouble. To minimize these troubles the Tokugawa Regency made an enactment in 1741 to the effect that the right of fishing and collecting weeds in the space lying within a line stretched from one headland to another should belong to the farmers living along the shores, but that the right of fishing and collecting weeds in the outer space should be enjoyed in common by the fishermen of all provinces. No fishing community should be allowed to interfere with the collection of weeds by farmers and no farming community should be allowed to interfere with fishing by fishermen. Fishing along the shores should be regulated according to the old usages, but fishing in the open sea should be open even to those who were new to the work.

Certain fees were charged at times for the privilege of the exclusive use of shores, while fishermen eligible for service in the maritime service of the Government were given similar privilege.

This simple regulation established by the Tokugawa Regency was generally adopted by the feudal princes governing seaside domains.

With the Restoration, the practice of exacting fees was abolished and the seas were declared to belong to the State. In all other respects the Government left the matter to be regulated according to existing usages and customs. Coming to 1886 the fishery guild regulations were enacted, but soon this simple legislature proved inadequate to deal with troubles constantly occuring among fishermen, and at last the law in question was promulgated with the consent of the Diet.

Encouragement of deep sea fisheries.—The law for the encouragement of deep sea fisheries was issued in 1897 and State

aids are now granted according to the tonnage of the ships employed in the work and to the number of the crew, provided such ships, whether steamers or sailing ships, engage in specified kinds of fishery approved of by the Government. The dvelopment of deep sea fisheries since the enforcement of the law may be inferred from the following table :—

Year.	No. of Ships.	Tonnage.	Sum of State aids.
			yen.
1898	1	90	680
1899	14	1,313	16,240
1900	17	1,888	25,260
1901	22	2,042	28,035

JAPANESE FISHERY ENTERPRISE IN KOREAN WATERS.—Our fishermen were engaged in fishery in Korean waters even before the Restoration, and as their number had grown more and more numerous the Government made special arrangements in 1883 and 1890 with the Korean Government to protect them in their pursuing this business there. In 1897 these fishermen established their own association at Fusan, while in 1900 the Government commenced to grant state aids to the guild established by these men.

NO. OF FISHING-BOATS TO KOREAN WATERS AND THEIR CATCH DURING THE TEN YEARS OF 1892—1901.

(In each set of figures the upper one represents No. of boats and the lower one value of catch in *yen*).

	1892.	1893.	1894.	1895.	1896.	1897.	1898.	1899.	1900.	1901.
Osaka	—	—	—	10	11	8	10	8	10	10
	—	—	—	3,000	3,200	3,000	3,800	4,000	4,500	—
Hyogo	—	—	—	5	16	21	43	47	41	38
	—	—	—	1,700	6,495	9,980	13,162	15,790	18,013	31,280
Miye	—	—	—	—	—	—	—	—	—	21
	—	—	—	—	—	—	—	—	—	211,050
Shimane ...	—	—	—	—	12	12	12	8	18	14
	—	—	—	—	2,099	570	750	230	720	250
Okayama ...	—	—	—	—	—	—	—	—	144	160
	—	—	—	—	—	—	—	—	2,588	—
Hiroshima ...	—	—	—	452	410	381	446	561	771	582
	—	—	—	234,092	169,777	105,755	159,695	280,358	326,626	256,222
Yamaguchi ...	79	97	88	82	95	93	290	490	320	368
	31,690	36,164	39,085	40,990	48,130	50,643	256,033	286,373	343,737	—

	1892.	1893.	1894.	1895.	1896.	1897.	1898.	1899.	1900.	1901.
Wakayama ...	—	—	—	—	—	—	—	—	—	11
	—	—	—	—	—	—	—	—	—	4,800
Tokushima ...	—	—	—	—	—	—	—	51	32	40
	—	—	—	—	—	—	—	11,720	26,914	43,208
Kagawa... ...	237	202	205	251	361	304	316	379	430	446
	52,496	58,382	64,752	71,214	47,993	39,995	48,065	141,697	157,362	109,283
Ehime	12	16	16	32	35	57	92	127	194	166
	7,210	8,710	9,370	26,900	36,600	47,270	66,962	64,500	73,857	79,550
Fukuoka ...	—	—	—	—	—	—	41	37	43	55
	—	—	—	—	—	—	8,777	7,288	10,649	12,170
Oita	—	—	—	—	—	—	—	—	304	344
	—	—	—	—	—	—	—	—	—	219,166
Saga	—	—	—	—	—	—	—	—	30	68
	—	—	—	—	—	—	—	—	13,118	21,702
Kumamoto ...	—	—	—	—	—	—	—	23	153	115
	—	—	—	—	—	—	—	12,295	41,858	43,279
Kagoshima ...	55	58	62	65	70	74	79	91	84	94
	9,683	10,208	11,408	10,465	12,320	13,615	14,536	10,465	19,392	19,850
Total ...	383	373	371	897	1,000	950	1,328	1,822	2,530	2,532
	101,076	113,464	124,615	388,361	326,614	270,828	571,780	834,566	1,039,379	1,051,310

ENCOURAGEMENT OF FISHERY BY THE LOCAL AND CENTRAL AUTHORITIES.—The matter relating to encouragement of fishery by the local offices recently made a marked progress. In 1887 the disbursements from the local treasury on account of fishery business amounted to only 1,531 *yen* throughout the land. The sums swelled to 360,000 *yen* in 1901 as shown in the following table:—

Year.	Fishery Expenditure.	Year.	Fishery Expenditure.
	yen.		*yen.*
1887	1,531	1895	31,593
1888	9,359	1896	50,468
1889	2,860	1897	62,427
1890	6,185	1898	71,687
1891	11,011	1899	108,687
1892	13,475	1900	188,911
1893	28,861	1901	320,417
1894	19,282	1902	360,043

In the foregoing disbursements the appropriation to fishery experimental laboratories and training schools amounted to most, as shown below:—

Year.	Experimental Laboratory.		Training School.		Total.	Expenses. *yen.*
	New.	Already existing.	New.	Already existing.		
1894	1	1	—	—	2	1,175
1895	1	2	—	—	3	2,715
1896	—	2	—	—	2	2,998
1897	—	2	—	—	2	3,779
1898	1	3	2	2	5	12,336
1899	4	7	—	2	13	34,685
1900	11	18	2	4	35	144,006
1901	2	20	—	4	26	229,754
1902	4	24	—	4	32	235,643
	—	—	—	—	—	—
Total ...	24	79	4	16	123	667,091

The laboratories and schools are allowed to participate in the state aids set apart, as described in the chapter of agricultural education, for encouraging agricultural education:—

Year.	Experimental Laboratory.		School.		Total.	
	No.	Aids.	No.	Aids.	No.	Aids.
		yen.		*yen.*		*yen.*
1900	7	12,200	1	1,200	8	13,400
1901	18	26,000	4	3,900	22	29,900
1902	21	40,100	4	5,200	25	45,300

Fishery Education.—The progress of fishery education has been very slow compared with that of agriculture and commerce. About 1889 a course of fishery was created for the first time in the Agricultural College at Komaba, but it was discontinued shortly after. The Fishery Training School of the Japan Fishery Association did much to diffuse knowledge in regard to this important branch of knowledge among the people, and during the ten years of its existence, for it was converted in 1897 into a Government institution, it turned out several hundreds of graduates. Of late, in consequence of the encouragement extended to fishery education by the Government, it has attained a striking improvement, as shown in the appended table:—

District.	Fishery School.		Training School.		State Aids.
	No.	Expenses.	No.	Expenses.	
		yen.		*yen.*	*yen.*
Hokkaidō	—	—	1	833	250
Aomori	—	—	3	2,835	750
Akita...	—	—	1	694	150
Iwate...	1	3,848	—	—	800
Miyagi	1	4,611	—	—	800
Niigata	—	—	1	830	550
Fukui	1	3,786	—	—	1,000
Shizuoka	1	1,100	2	1,986	700
Kōchi	—	—	3	1,044	300
Tottori	—	—	1	—	—
Nagasaki	—	—	1	1,193	400
Kagoshima	—	—	1	840	200
	—		—		
Total	4	15,345	14	10,257	5,900

Associations and Public Bodies on Fishery.—Of the fishery associations and public bodies the Japan Fishery Association and the Japan Salt Association are the most important. The former was organized in 1883 and contains 5,216 members. It produced, as mentioned above, a large number of graduates in fishery, and in general acts as the headquarters of marine industry of the country. The other body was organized in 1896 with the special purpose of improving the salt industry. The members number 2,600. Both are publishing monthly proceedings. There are besides fishery societies of local importance, and also fishery guilds and sale guilds created in consequence of the Fishery Law.

PART III.

MANUFACTURING INDUSTRY.

CHAPTER I.—General Manufacturing Industry.

History—Administration—Legislative Measures—Principal Exports of Manufactured Goods—Principal Imports of Industrial Goods—Output of Principal Manufactured Goods.

I. HISTORY.

Before the Restoration.—During the peaceful time of the Tokugawa rêgime, the manufacturing industry received from the feudal princes and the Shogunate itself protection and encouragement. The Shogunate too resumed with Korea the friendship that had been interrupted for some while, connived at our people carrying on secretly commercial transaction with Chinese merchants; and even permitted them to expand similar transaction with the peoples of Annum, Siam, Luzon, India and various countries in the Southern Seas, also with Portugal, Spain, England, Holland and Mexico. The first dawn of our industrial development may be ascribed to this commercial relations with foreign countrymen. In these days many foreign ships used to visit the ports of Kagoshima, Hakata, Goto, Hirado, Sakae, and Nagasaki to trade with our people, while not a few of the latter also crossed over on a similar mission to Siam, Luzon, and several places in the South Seas. It is hardly necessary to state that this contact with foreigners and the trade with them largely contributed either directly or indirectly to the development of our industry. The prohibition suddenly enforeced from political consideration during the

Benefit of Foreign Intercourse.

era of Kwan-ei, (1704—1710 A.D.) on this foreign trade and intercourse did serious harm to our trade and industry, and hence on our prosperity. One thing that was fortunate was that the prohibition was not absolute, and the two countries of China and Holland were allowed to continue their commercial transactions with us as before; so that the merchants of these two cauntries brought to Japan foreign goods through the port of Nagasaki which was at that time the only open market in Japan. The permission reserved to the Netherlanders was matter of special importance to our country, serving as it did the connecting like of introducing Western civilization into Japan.

Situation of the Industry at the Time of the Restoration.—As mentioned above, manufacturing industry found congenial atmosphere for its development during the tranquil period of the Tokugawa rêgime, and indeed many were the industrial articles that were then either improved or newly invented. Principal manufacturing districts and their staple produce were as follows about the time of the Restoration:—

1. Raw Silk.—Musashi, Kozuke, Shinano, Kai, Mutsu, etc.
2. Silk Fabrics.—Nishijin in Kyoto, (relief silk), Kiriu, Ashikaga, Isezaki, Hachioji (plain silk) Kai ("Gunnai-kaiki") Fukushima (plain silk), Akita (relief silk), Yonezawa (figured silk), Tango, and Nagahama (crêpe silk), Kawagoe ("Nanako"), Hakata (sash) Sendai (skirt for men) etc.
3. Hemp Fabrics.—Nara (breached cotton goods), Echigo ("Jofu" goods), Omi (general hempen fabrics and musquito nets), etc.
4. Cotton Fabrics.—Kokura ("Kokura-ori"), Kurume ("Kasuri") Satsuma ("Kasuri"), Yamato ("Kasuri"), Iyo ("Kasuri"), Kawachi and Mikawa (white cotton cloth), Shimotsuke (Maoka cotton cloth).
5. Porcelain.—Kyoto (Awada and Kiyomizu ware), Owari (Seto-ware), Ise (Banko-ware), Kaga (Kutani-ware), Izumo (Rakusan and Fushina-ware), Awaji (Minpei-ware), Chikuzen (Takatori-ware), Hizen (Arita-ware), Satsuma (Satsuma-ware), Iwaki (Soma-ware), Bizen (Imbe-ware), etc.
6. Lacquered-Wares.—Kyoto (art ware), Noto (Wajima-ware), Kaga (Kanazawa and Yamanaka-ware), Kii (Kuroe-ware), Iwa-

shiro (Aizu-ware), Wakasa (Wakasa-ware), Mutsu (Tsugaru-ware), Dewa (Noto-ware), etc.

7. Copper Ware.—Kyoto, Kaga, Takaoka, etc.
8. Japanese Paper. — Kyoto, Suruga, Echizen, Mino, Iwami, Tosa, etc,

Other important ware and goods besides those mentioned were gold lacquered ware, carved ware, cutlery, cast iron ware, wood or bamboo or leather ware, mattings, *sake*, and soy.

After the Restoration.—The Restoration has inaugurated a new epoch in our manufacturing industry, and this change was especially marked in regard to the introduction of labor saving machines. Not that their use was unknown before the Restoration ; on the contrary even prior to that period their use was encouraged by not a few feudal princes, especially in connection with cotton spinning and weaving. But it was only after the Restoration that the Government made a systematic effort to encourage the use of machinery in the manufacturing industry and established model workshops and factories for that purpose. This official effort was eagerly welcomed by the people who began to make extensive use of machines in the business of manufacturing raw silk. Other industries in the similar line many of which were new to Japan, were cotton and silk spinning, weaving, shipbuilding, iron industries of various sorts, the manufacture of cement, glass, bricks, matches, paper of foreign style, tobacco, and beer, the refining of sugar, the preparation of india-rubber, the making of paint, artificial fertilizers, coal, gas, coke and the carrying on of electric industries of various sorts, &c. &c. In the manufacturing industry as carried on by hand the introduction of Jacquard, Butten, and other kinds of looms, and the introduction of such dye-stuffs as aniline, alizarine, etc., have imparted a powerful impulse to the development of weaving and of dyeing. In a similar way the use of Western style of kiln and of Western pigments, and the use of gypsum mould and copper lithograph have opened a new path of development for our keramic industry. The progress too of the fancy-mat making and of the making of straw-plaits has been something striking and the goods as are now turned out for foreign markets display a highly finished workmanship.

New Industries.

The Progress of the Industry in Recent Times.—Under these circumstances our manufacturing industry has made great strides during the last two or three decades, so that not only are articles produced for home consumption but also a large quantity of goods for the foreign markets. How great this advance is may be easily inferred from the fact that the volume of manufactured good which did not exceed 10 million *yen* in 1890 advanced to over 89,800,000 in 1902, an increase of about ninefold. The total volume of our export goods of all descriptions advanced during the same period from 55,700,000 to 255,600,000 *yen* both in round numbers, that is to say, 4.6-fold. Again, even if raw silk, straw-plaits, etc.. are excluded, the export of industrial commodities occupies about 35 per cent. of the total value of exports. Thus while in 1890 the proportion of industrial commodities exported constituted 18 per cent. of the total volume of export, the percentage advanced over to 35 in 1902. It will be seen therefore that the part played by manufacturing industry in the economy of our export trade is one of supreme importance.

II. ADMINISTRATION OF MANUFACTURING INDUSTRY.

Matters relating to manufacturing industry were at first controlled by the Industrial Bureau of the former Department of Industrial Affairs, to be transferred, on the abolition of that Department, to the Department of Agriculture and Commerce. Though the control has remained in this Department from that time to this day, the office that had direct charge of manufacturing affairs has undergone frequent alterations, for the tenure of the Bureau of Industry was precarious and was repeatedly created and abolished and finally combined, as it is still to-day, with the Bureau of Commerce. At present all matters relating to manufacture are under the control of the Bureau of Commerce and Industry, and are in direct charge of the Section of Industry which forms part of the Bureau. The Section in question deals with matters relating to experiment made with the view to improving manufacture and manufactured goods, the position and construction of workshops, the control of boilers, the

employment and engagement of operatives and apprentices together with their relief, education, health, etc. In April 1900 a temporary factory committee was created in the Section of Industry, and was made to inquire into matters concerning factories and operatives.

III. LEGISLATIVE MEASURES RELATING TO MANUFACTURING INDUSTRY.

General Remarks.—The first legislative measure enacted about manufacture was that issued by the Department of Agriculture and Commerce in November 1884, when an Ordinance was promulgated about the formation of guilds. The object of that measure was to encourage different interest to form themselves into guilds and to provide against the production of shoddy goods. In December of 1888 regulations relating to patents, designs and trade-marks were issued by Imperial Ordinances, intended to extend protection to inventions, designs and trade-marks, and to encourage the development of manufacture and industry and to protect the interest of business men. In April of 1898 a law relating to guilds of staple export interests was enacted, entitling those engaged in the manufacture or transaction of any staple export commodity to organize themselves, on the approbation of the Minister of Agriculture and Commerce, into aguild and further entitling a guild so formed to compel any one engaged in a similar line to join it. Such a guild was also permitted to form itself into a juridical person. It is needless perhaps to state that the aim of the law in encouraging the formation of a guild was to put a check to all evil practices tending to retard the development of the business. Three years later this law was superseded by another relating to staple commodities interests, and therefore more comprehensive in its scope and operation. About the same time a law relating to industrial guilds was promulgated, the object being that credit guilds, purchase guilds, sales guilds, and production guilds may be organized as economic corporations with the object of furthering the business and economy of the members. In February 1901 rules were issued relating to

the establishment of local and communal industrial experimental laboratories or manufacturing training schools, the object of the enactment being to encourage the improvement and progress of manufacture. It was arranged about the same time that matters relating to the control of boilers, factories and operatives be left in charge of the respective local offices.

IV. PRINCIPAL EXPORTS OF MANUFACTURED GOODS.

Position of Manufacture in Export Trade.—The different parts played by manufactured, agricultural, marine and other goods in the economy of export trade and their movement may be seen from the following table.

Kind of Produce.	1902. *yen.*	1901. *yen.*	1898. *yen.*	1890. *yen.*	Relative Percentage. 1902.	1901.	1898.	1890.
Industrial ...	74,788,770	76,050,312	66,422,690	10,090,125	38.0	36.3	41.5	18.0
Agricultural ...	73,336,835	94,507,774	66,184,407	28,776,272	37.8	45.1	41.4	51.6
Fishery	5,902,623	5,624,303	4,702,739	3,698,484	3.5	2.7	2.9	6.6
Mining	27,459,979	24,102,161	20,357,640	11,098,964	14.2	11.5	12.4	2.00
Miscellaneous...	12,324,339	9,233,027	2,278,635	2,128,002	6.5	4.4	1.5	3.8
Total ...	193,812,546	209,517,577	159,946,111	55,791,847	100	100	100	100

It ought to be noted that raw silk of all sorts and straw-plaits are included under the head of agricultural goods. It will be seen from the foregoing table that manufactured goods have made the most striking development in the export trade, and that while in 1890 their share was only 18 per cent. against 51.6 of agricultural goods the relative proportion became 41.5 and 41.4 respectively in 1898, 34.7 and 43.6 in 1901 and 35.1 and 44.4 in 1902. In other words, agricultural goods that formerly occupied the proud position of being the most important item in the economy of export trade began to be superseded by manufactured goods.

The importance of manufactured goods as a factor in export trade becomes really preponderating when raw silk of all kinds and straw-plaits are counted among them instead of being included in agricultural goods, as shown below:—

	1902.	1901.	1898.	Percentage. 1902.	1901.	1898.
Manufactured... ...	127,632,276	145,522,297	113,530,035	66.0	69.4	70.9
Agricultural	20,493,329	25,035,789	19,077,062	10 5	11.9	11.9
Others	45,686,941	38,959,491	27,339,014	23.5	18.7	17.2
Total	193,812,546	209,517,577	159,946,111	100	100	100

The manufactured goods computed in that way have always constituted more than 66 per cent. of the total volume while the agricultural have constituted less than 11.

PRINCIPAL EXPORT ITEMS OF MANUFACTURED GOODS.—Below is given a table showing the movement of the export of staple manufactured goods.

PRINCIPAL EXPORTS OF MANUFACTURED GOODS.

(unit of thousand).

	1885.	1890.	1895.	1900.	1901.	1902.
	yen.	*yen.*	*yen.*	*yen.*	*yen.*	*yen.*
Cotton, yarns...	—	2	1,034	20,589	21,465	19,901
Silk, raw...	13,033	13,859	47,866	44,657	74,667	76,859
Silk, *noshi*	672	1,445	1,347	960	995	1,694
Silk, waste	462	1,126	1,515	3,200	3,473	4,019
Cotton Tissues, white	—	—	—	1,778	1,357	1,079
Cotton Tissues, gray shirting.	—	—	—	1,754	1,347	1,523
Cotton Tissues, cloths	—	—	—	477	823	1,134
Cotton Tissues, *tenuguiji* ...	—	45	53	101	183	209
Towels	—	—	—	356	509	686
Cotton Tissues, *chijimi*... ...	—	51	585	370	380	351
Cotton Tissues, *gasuitoori* ...	—	—	—	190	100	49
Cotton Tissues, flannel or *Monpa*...	—	3	400	602	512	548
Cotton Blankets	—	—	—	235	265	225
Cotton Shirts...	—	—	—	237	234	156
Cotton Undershirts and Drawers	9	37	96	235	265	324
Silk Tissues, *habutae*	—	818	8,354	17,436	23,912	24,685
Silk Tissues, *kaiki*...	—	—	1,392	878	1,315	2,672
Silk Handkerchiefs	—	2,516	5,339	4,318	3,951	3,154
Carpets, hemp, cotton or wool.	2	51	1,635	866	707	653
Clocks, standing and hanging.	—	—	—	229	282	256
Iron, manufactures of	7	32	96	247	368	437
Bronze and Copper ware ...	17	209	330	284	273	402

	1885.	1890.	1895.	1900.	1901.	1902.
	yen.	*yen.*	*yen.*	*yen.*	*yen.*	*yen.*
Jinrikisha	34	50	104	121	234	198
Lamp and parts thereof ...	--	—	—	282	407	488
Furnitures	9	48	103	208	210	199
Glass, manufactures of	4	77	346	478	394	439
Cement	—	—	—	194	245	308
Porcelain and Earthenware ...	695	1,245	1,955	2,471	2,491	2,461
Shippoki	23	36	132	188	250	183
Copy-paper	—	—	—	336	351	298
Paper, hanging	20	101	79	116	76	103
Paper European	2	5	40	228	251	240
Paper Napkins	28	108	506	140	153	188
Matches	60	1,489	4,672	5,760	7,392	8,169
Leather	258	97	323	1,133	690	760
Match Sticks	—	—	—	153	189	175
Soap	65	34	118	170	266	201
Beer and other all Liquors ...	—	20	132	612	1,697	1,379
Sake	15	41	415	549	790	831
Soy	10	23	74	280	279	390
Cigarettes	3	8	115	715	1,683	2,188
Flour	36	43	191	73	9	16
Hats and Caps	1	3	102	124	95	148
Brushes	—	--	—	384	457	626
Umbrellas, European	1	114	735	860	1,023	1,037
Lacquered Ware	467	572	1,083	1,066	994	889
Straw-Plaits	—	87	1,387	4,025	2,989	2,938
Mats	—	347	3,461	3,310	5,351	6,772
Fans, Folded and Round ...	137	339	430	949	798	795
Screens	148	269	366	408	407	433
Ivory, manufactures of	23	35	106	105	181	213
Wood, manufactures of	3	142	398	344	243	269
Bamboo, manufactures of ...	105	194	417	605	536	433
Buttons	—	—	—	319	296	371
Toy	—	—	—	346	346	385
Boards, for Tea Box	—	—	—	398	270	413
Tinned Provisions	—	--		—	229	272
European Style Clothes ...	—	—	—	—	299	504
Foot-Gears	—	—	—	—	133	272
Silk-Bedding	—	—	—	—	63	158
Gold and Silver Ware	—	—	—	—	98	181
"Silk Paper" } Tissue Paper }	—	—	—	—	370	440
Willow Plaits	—	—	—	—	244	464
Wood Parings	—	—	—	—	65	378
Total	16,525	25,774	91,229	137,293	33,544	37,605

As shown in the foregoing table the staple manufactured exports for 1885 numbered 35 comprising raw silk of all sorts, knitting-work, carpets, iron ware, bronze ware, copper ware, jinrikisha, furniture, glass ware, porcelain and earthenware, cloisonne ware, wall-paper, paper napkin, matches, leather, soap, beer and other liquors, soy, cigarettes, flour, umbrella, lacquered ware, fans, screens, ivory ware, wooden and bamboo ware, etc. The volume of export of all those goods did not exceed 16 million *yen* of which raw silk, contributed 13,000,000 *yen*, porcelain and earthenware 600,000 *yen*, lacquered ware 460,000, each of the rest occupying the level of less than 200,000 *yen*. In 1890 the new items of cotton yarns, towels, cotton crepe, cotton flannel, *habutaye* silk, silk handkerchiefs, and straw-plait made their appearance, bringing up the total export of manufactured goods to 25 million *yen*, an increase of about 50 per cent. compared with that of 1885. Of that sum of 25 millions, raw silk occupied 13 millions, silk handkerchiefs 2,500,000 *yen*, matches 1,400,000 *yen*, porcelain and earthenware 1,200,000 *yen*, lacquered ware 570,000 *yen*, fancy matting 340,000 *yen*, folding and round fans 330,000 *yen*. The export of silk handkerchiefs, to such extent while it was non-existent in 1885 is a noteworthy fact, and equally striking was the advance of the export of matches which did not exceed 60,000 *yen*, in the same year. The export of fancy matting to the extent of 350,000 *yen* is also worth noticing, inasmuch as fancy matting did not figure on the list of export goods in 1885 or at best its export was really insignificant. The appearance for the first time of cotton yarns on the list is also indicative of the progress of our manufactures.

Coming down to 1895 we find that the total export had advanced to 91 million *yen*, an increase of 550 per cent. as against that of 1885 and 350 per cent. against that of 1890. Raw silk with 47 million *yen* continued to occupy the first rank on the list, followed by 8 millions of *habutaye*, 5 millions of silk handkerchiefs, 4,600,000 *yen* of matches, 3,400,000 *yen* of fancy matting, 1,900,000 *yen* of porcelain and earthenware. The items that were specially conspicuous in 1895 were *habutaye* and cotton yarns, the export of the former amounting to about 810,000 *yen* in 1890 and that of the latter to only about 2,000 *yen*. In a similar way the

advance of silk handkerchiefs, *kaiki* silk, matches and fancy matting was also great. In 1900 quite a large number of new items appeared on the list, as white cotton tissue, shirting, cloth, gassed yarn goods, cotton blanket, clocks, lamps, copy-paper, match sticks, brush, toys, boards of tea-chest, etc. The total export reached the figure of 130 million *yen*, an increase of 830 per cent. against that of 1885, 520 against that of 1890, 50 per cent. against that of 1895. The principal items were raw silk with 44 million *yen*, cotton yarns with 20 millions, *habutaye* with 17 millions, matches with 5,700,000 *yen*, silk handkerchiefs with 4,300,000 *yen*, straw plaits with 4,000,000 *yen*, fancy matting with 3 millions, porcelain and earthenware with 2,400,000, cotton piece goods with 1,700,000 *yen*, hides and leathers with 1,100,000, lacquered ware with 1 million, etc. The figures for cotton yarns and *habutaye* both of which practically began to go abroad from 1890 really striking. In 1902 the nine new items such as tinned provisions, European-style clothes, foot-gears, silk bed-clothes etc. began to figure on the export list which reached over 178½ millions *yen* in value. This shows an increase of 18 fold compared with the total of 1885, of 6.9 fold compared with that of 1890, 1.9 fold compared with that of 1895, and 1.3 fold compared with that of 1900. The export items that reached over million *yen* each numbered 1.7 in 1902, these being as follows:—silk, 76,850,000; *habutaye* silk, 24,680,000 *yen*; cotton fabrics, 19,900,000 *yen*; matches, 8,160,000 *yen*; fancy matting, 6,770,000 *yen*; silk waste, 4,010,000 *yen*; silk handkerchiefs, 3,150,000 *yen*; straw-plaits, 2,930,000 *yen*; *kaiki* silk, 2,670,000 *yen*, etc. all in round numbers. The movement of those staple exports and the ratio of their progress as compared with 1885 are shown below:—

Exports.	1885.	1890.	1895.	1900.	1902.
	%	%	%	%	%
Raw Silk...	100.0	106.3	367.2	342.6	589.7
Habutaye	—	100.0	1,020.7	2,128.9	3,015.8
Cotton Tissues	—	100.0	43,759.7	870,950.2	841,824.1
Matches	100.0	2,458.5	7,715.2	9,511.7	13,489.4
Fancy Matting	100.0	37,170.2	370,200.0	354,015.2	724,331.1
Silk Waste	100.0	243.6	327.6	692.0	869.0
Silk Handkerchief...	—	100.0	212.2	171.6	125.3

Exports.	1885.	1890.	1895.	1900.	1902.
	%	%	%	%	%
Straw-plaits	—	100.0	1,591.4	4,616.2	3,370.4
Kaiki silk	—	—	100.0	63.1	191.9
Earthenware and Porcelain...	100.0	179.2	281.2	355.5	354.1
Cigarettes	100.0	237.8	3,204.0	19,800.2	60,575.5
Noshi Silk	100.0	214.9	200.3	143.7	251.9
Shirtings...	—	—	—	100.0	886.8
Beer and Liqours	100.0	2,016.4	13,139.8	60,667.7	1,366,076.2
Cloth	—	—	—	100.0	237.4
Cotton Tissue, white	—	—	—	100.0	60.7
Umbrella...	—	6,579.2	42,719.8	50,028.2	60,309.5

V. PRINCIPAL IMPORTS OF MANUFACTURED GOODS.

Position of manufactured Goods in Import Trade.—Next the movement of the principal import goods shall be described:—

TABLE SHOWING THE CLASSIFIED TOTAL VALUE OF INDUSTRIAL COMMODITIES.

	Manufactured.	Agricultural.	Fishery.	Mining.	Miscellaneous.	Total.
	yen.	*yen.*	*yen.*	*yen.*	*yen.*	*yen.*
1902...	103,340,163	128,019,666	2,011,487	4,589,359	33,358,768	271,319,443
1901...	112,861,302	98,961,390	1,184,828	6,791,320	35,486,436	255,473,276
1900...	141,975,874	93,800,279	2,184,846	6,684,205	41,943,218	286,588,421
1899...	86,424,265	96,667,462	1,212,896	4,195,829	31,550,532	226,050,984
1898...	122,444,710	112,754,614	609,736	3,728,106	3,7733,563	277,270,729
1890...	24,621,570	42,326,361	159,753	10 439,008	4,123,662	81,670,354
	RELATIVE PERCENTAGE.					
1902...	3.81	4.72	0.07	0.17	1.23	10.00
1901...	4.42	3.87	0.05	0.27	1.39	10.00
1900...	4.96	3.27	0.08	0.23	1.46	10.00
1899...	3.93	4.39	0.06	0.19	1.43	10.00
1898...	4.42	4.07	0.02	0.13	1.36	10.00
1890...	3.02	5.18	0.02	1.28	0.50	10.00

It will be seen from the foregoing table that the import of manufactured goods amounted to 24,600,000 *yen* approximately in 1890, that is to say 30.2 per cent. of the total import against 51,8 per cent. of agricultural imports. The import of manufactured goods rose in 1898 to about fivefold of that of 1890, with the ratio of 44.2 per cent. against 40.7 of agricultural goods. Further, in 1899

the amount of manufactured goods imported were about three and a half times the amount imported in 1890 with the ratio of about 39 per cent. against 42 of agricultural goods. In the following year the import of manufactured goods again rose to the level of 100 million *yen* and to over 570 per cent. of that of 1890, the ratio to the total volume being about 47 per cent. against 32 of agricultural goods. In 1901 the ratio of manufactured goods, out of the total import, occupied 44 per cent. against 38 of agricultural goods, while coming to the next year the relative proportion was reversed, the former corresponding to 38 per cent. and the latter 47 per cent. of the total volume of import.

Principal Import Items of Manufactured Goods. - Now the import of foreign commodities increases as a rule with the purchasing power of a nation, but it alone cannot prove the condition of industry in the country in question. Nevertheless a careful examination of the movement of imports into our country tends to confirm the progress of our manufacturing industry, seeing that while the import of raw materials, machinery, etc. is increasing that of goods of special sorts is declining or at best making very slow progress. The following table of imports will go to prove this point :—

PRINCIPAL IMPORTS OF MANUFACTURED GOODS.

(unit of thousand).

	1885.	1890.	1895.	1900.	1901.	1902.
	yen.	*yen.*	*yen.*	*yen.*	*yen.*	*yen.*
Cotton yarn	5,190	9,928	7,082	7,043	4,873	1,747
Cotton threads	9	59	328	333	344	359
Flax or linen yarns	3	79	708	324	100	301
Woolen and worsted yarns of all kind	10	494	951	1,798	866	922
Shirtings, gray	1,233	1,716	3,071	5,558	2,981	5,070
Shirtings, white	98	225	505	1,325	575	1,191
Turkey-red cambrics	430	366	418	424	189	302
Shirtings twilled and Cotton drills	151	137	577	435	142	223
Victoria lawns	8	53	133	381	180	262
Cotton prints	208	478	383	2,002	680	2 602
*Cotton flannels	—	—	—	444	234	704
Cotton satins and Italians ...	103	231	794	3,662	1,684	1,788
Cotton velvets	339	382	486	864	453	1,231
Handkerchiefs, cotton	38	138	204	367	107	94

	1885.	1890.	1895.	1900.	1901.	1902.
	yen.	*yen.*	*yen.*	*yen.*	*yen.*	*yen.*
*Plush or velvets, silk and cotton	—	—	—	984	379	631
Italian cloth	—	—	921	1,120	601	1,181
Serges	26	63	119	1,162	376	242
Woolen cloth (cotton-woolen cloth included)	474	1,056	3,120	5,403	2,219	3,430
Flannels	287	927	961	917	313	487
Muslin de laine	906	2,784	3,633	7,364	3,339	3,754
Blankets	207	572	1,569	393	78	123
Pongee	31	24	78	134	122	84
Steam boilers and engines	78	345	431	773	1,095	965
Electric motor and Electric light apparatus or instruments	—	501	311	726	979	1,323
Spinning	151	1,065	1,896	809	1,279	700
Looms	4	127	246	232	420	94
Sewing	16	14	51	240	161	191
Paper making	4	28	48	476	379	224
Printing machines	5	39	96	111	126	93
Fire-engines and pump	35	43	155	374	281	209
Implements and tools of farmers and machines	25	43	84	263	277	259
Watch accessories	4	17	99	464	353	238
*Watch movements and fittings	—	—	—	459	426	259
Clocks	295	1,027	993	916	603	325
*Carriages, bicycles and tricycles	—	—	—	521	540	856
Cars or carriages, railway passengers	29	635	643	531	112	128
Cars or waggons, railway freight	—	123	99	804	793	695
Locomotive-engines	93	659	1,163	1,089	1,749	1,708
Vessels, steam	636	732	4,700	2,648	2,565	1,488
Photographic apparatus	1	35	116	260	239	266
Zinc, sheet	48	268	500	882	700	1,078
Lead, sheet	15	60	44	174	118	61
Bar and rod, iron	296	830	2,085	5,243	3,511	3,519
Sheet iron	192	417	1,104	6,245	3,293	4,399
Tinned plate or sheet	49	33	313	832	884	797
Rails	497	1,259	925	4,753	1,612	1,662
Nails, iron	414	693	1,278	2,181	1,364	1,451
Pipes and tubes, iron	19	166	604	2,981	1,591	1,073
Copper tubes	14	29	105	219	264	221

	1885.	1890.	1895.	1900.	1901.	1902.
	yen.	*yen.*	*yen.*	*yen.*	*yen.*	*yen.*
Brass tubes	19	17	107	242	201	151
Glass	163	394	426	1,149	1,395	1,836
Cement	33	175	42	120	63	28
Paper, printing	24	413	307	2,036	864	1,402
Other European paper	55	158	477	806	813	1,184
Card-board	—	—	—	—	330	351
Rice-paper	—	—	—	—	156	475
Imitation Japanese paper	—	—	—	—	277	198
Imitation Japanese "Silk-paper"	—	—	—	—	43	317
Wrapping paper	—	—	—	—	196	85
*Pulp for making paper	—	—	—	455	205	365
Hides or skins, bull, ox, cow, and buffalo	305	243	695	656	786	813
Leather	412	652	1,590	2,085	1,347	1,346
Oil, kerosene	1,667	4,950	4,303	14,162	14,943	14,937
*Oil, lubricating	—	—	—	624	308	324
Paraffin wax	6	107	266	511	449	452
Caouchouc, manufactures of	32	99	222	332	162	223
India rubber	13	23	82	208	222	277
*Celluloid	—	—	—	442	383	275
Cork	6	19	59	302	258	143
Cokes	10	5	90	314	157	103
Soap	30	51	66	242	174	366
Soda, caustic	119	145	234	929	468	787
Soda-ash	—	—	—	482	450	519
Potash, chlorate of	—	182	419	679	585	785
Acid, salicylic	30	91	285	167	140	135
Glycerine	11	28	59	89	275	186
*Soda, bicarbonate of	18	39	102	153	174	156
Phosphorus, amorphous	12	89	260	244	237	296
Dynamite	19	70	231	187	290	267
Aniline dyes	142	349	682	1,328	884	1,653
Alizarine dyes	—	39	192	156	136	170
Logwood extract	49	99	218	321	179	363
Paint	—	—	292	286	311	261
Wines and all other liqours	121	480	821	680	698	695
Alcohol	—	113	440	132	169	201
Sugar, refined	2,509	5,436	7,673	15,598	21,111	5,589
Sugar, half-refined	2,144	2,974	4,074	11,007	12,381	8,878
Tobacco	11	214	491	585	121	995
Flours	102	229	413	3,882	2,897	3,302
Condensed milk	50	177	139	663	641	863
Hats and Caps	134	348	82	411	341	232
Mats, packing	66	80	148	221	241	259
Total	21,687	47,426	69,960	141,237	112,861	103,340

Note :—In the table the figures marked with a star (*) denote those goods the exact quantity of which was unknown previous to 1900, owing to the different method then adopted in compiling the returns.

(*A*).—PRINCIPAL IMPORTS OF AGRICULTURAL GOODS RELATING TO INDUSTRY.

(unit of thousand).

Kind.	1885.	1890.	1895.	1900.	1901.	1902.
	yen.	*yen.*	*yen.*	*yen.*	*yen.*	*yen.*
Cotton	809	5,365	24,822	59,471	60,650	79,748
Rice	674	12,302	4,357	9,201	11,878	17,750
Oil-cake	21	194	946	5,696	8,115	10,121
Beans, Peas and Pulse	92	1,856	2,554	4,817	5,328	6,786
Indigo, Dry	61	201	581	3,902	2,665	3,097
Flax, Hemp, Jute and China Grass	20	139	645	1,700	1,370	1,602
Eggs, Fresh	21	31	95	1,243	1,298	1,196
Wool	75	369	1,136	3,919	4,127	3,397
Pig Bristle and Hair, other animal	—	15	58	216	260	294
Malt	—	—	—	619	765	330
Timbers, Lumbers, Boards and Planks	24	27	159	869	709	755
Seeds, Cotton	—	—	—	739	571	787
Cocoons	—	—	—	618	342	546
Seeds, sesame	—	4	60	194	284	426
Lacquer	—	9	145	237	46	21
Tusser Silk Yarns	—	—	—	351	433	955
Ivory or Tusks, Elephant ...	23	65	110	180	112	163
Total	1,960	20,583	35,674	93,800	98,961	128,019

(*B*).—PRINCIPAL IMPORTS OF MARINE PRODUCTS.

(unit of thousand).

Kind.	1885.	1890.	1895.	1900.	1901.	1902.
	yen.	*yen.*	*yen.*	*yen.*	*yen.*	*yen.*
Salted Fish	—	5	107	2,184	1,404	2,011
Total	—	5	107	2.184	1,404	2,011

(*C*).—PRINCIPAL IMPORTS OF MINERALS.

(unit of thousand).

Kind.	1885.	1890.	1895.	1900.	1901.	1902.
	yen.	*yen.*	*yen.*	*yen.*	*yen.*	*yen.*
Coal	85	110	853	2,100	2,542	1,598
Pig and Ingot, Iron	105	185	673	926	1,593	982
Steel	176	194	503	1,153	694	660
Zinc, Block, Ingot and Slab ...	20	69	134	686	230	255
Lead, Pig, Ingot and Slab ...	16	85	313	927	876	510
Tin, Block, Ingot and Slab ...	32	69	191	473	530	501
Mercury	33	102	141	258	218	244
Salt	1	2	3	122	75	237
Total	472	821	2,815	6,684	6,761	4,589

VI. OUTPUT OF PRINCIPAL MANUFACTURED GOODS.

Output of Principal Manufactured Goods.—The industry in which machinery was used, was till about 1887, in a comparatively insignificant state, but it became active two or three years after, and finally received a powerful impetus after the Japan-China war. Appended is a table of the output of our principal manufactured commodities during the last five years:—

(unit of thousand).

Kind.	1896.	1897.	1898.	1899.	1900.	1901.
Silk, Raw	*kwan.* 1,442	*kwan.* 1,537	*kwan.* 1,479	*kwan.* 1,754	*kwan.* 1,755	*kwan.* 1,750
	yen. —	*yen.* —	*yen.* —	*yen.* 110,972	*yen.* 86,233	*yen.* 86,623
Silk Yarns, Spinned...	740	1,842	2,846	4,233	4,296	—
Cotton Yarns, Spinned	39,455	50,634	56,285	81,620	73,619	94,562
Hemp and Hempen Yarn ...	—	—	—	2,473	—	—
Silk Fabrics	54,095	63,678	73,936	90,717	83,468	76,941
Silk Tissues, *Habutae*	15,232	17,683	21,523	29,528	25,819	30,003
Silk Tissues, *Kaiki*	3,614	5,091	5,049	6,343	7,484	4,402
Silk Tissues, *Chirimen* (Silk crêpes)	8,412	9,102	8,286	11,499	9,379	7,829
Others	26,836	31,800	39,077	43,345	40,784	34,706
Cotton Fabrics...	39,080	42,253	48,728	52,857	61,326	49,935
Cotton Tissues, Flannel ...	7,350	7,718	9,089	8,893	9,720	8,230
Cotton Tissues, *Chijimi* (Cotton crêpes)...	1,406	1,450	1,316	2,667	2,476	1,665
Cotton Tissues White	9,949	10,261	14,511	12,309	15,089	13,030
Others	20,373	22,823	23,811	28,985	34,040	27,010

(unit of thousand).

Kind.	1896.	1897.	1898.	1899.	1900.	1901.
	yen.	*yen.*	*yen.*	*yen.*	*yen.*	*yen.*
Silk-Cotton Fabrics...	9,131	11,723	16,216	18,546	20,275	18,056
Hempen Fabrics	1,636	2,903	2,967	3,161	2,851	3,345
Woolen Fabrics	1,094	1,039	1,655	3,384	5,034	5,083
Woolen and Worsted Cloths ...	—	—	—	—	—	—
Woolen and Worsted Tissues...	—	99	123	254	—	—
Flannel, etc.	160	122	179	393	—	—
Muslin de Laine	—	53	54	1,064	—	—
Others	934	764	1,299	16,711	—	—
Miscellaneous Fabrics	—	—	—	549	—	233
Carpets, Hemp, Cotton or Wool	965	1,090	1,073	1,046	—	—
Silk Handkerchiefs	717	4,345	4,055	4,318	—	—
Knitting	— 293	— 1,457	— 1,661	518 1,326	— —	— —
Machineries, etc.	9,370	3,730	1,971	4,175	—	—
Ships and Boats	—	—	—	4,651	—	—
Japanese Junks	—	—	—	1,524	—	—
Steamships	—	—	—	2,648	—	—
Others	—	—	—	479	—	—
Clocks	676	722	765	1,190	—	—
Jinrikisha	—	443	454	367	—	—
Bronze and Copper Ware ...	924	1,130	1,194	1,383	1,106	1,714
Porcelain and Earthen ware ...	5,205	5,163	4,965	5,867	6,873	6,935
Shippoki	270	219	191	315	—	—
Glass-Ware	— 1,481	— 1,118	— 1,341	1,400 92	— —	— —
Cement, Portland	1,350	2,284	2,160	2,372	—	—
Brick	1,446	1,827	1,158	598	—	—
Paper...	13,053	15,268	15,293	16,640	20,986	19,791
European Paper	2,745	3,006	2,901	4,947	7,001	7,140
Japanese Paper	10,308	12,261	12,392	11,992	13,985	12,650
Leather or Hide	— 2,715	— 994	— 855	1,544 49	2,392 200	2,566 9,266
Matches	5,464	6,548	6,445	5,871	5,886	—
Oil, Kerosene	—	—	—	1,556	—	—
Sulphate of Potash	65	198	260	—	—	—
Phosphate of Soda	—	—	—	867	—	—
Sulphuric acid	—	—	—	559	—	—
Soap	244	933	893	794	—	—
Sake	58,723	73,318	83,691	108,328	—	—
Beer	636	642	809	2,809	—	—
Soy	10,900	14,616	13,938	23,782	—	—

	1896.	1897.	1898.	1899.	1900.	1901.
	kwan.	*kwan.*	*kwan.*	*yen.*	*yen.*	*yen.*
Sugar	12,642	10,550	14,527	5,662	6,216	5,207
	„	„	„			
White	418	473	786	571	498	560
	„	„	„			
Shiro-shita	6,608	4,278	3,866	1,513	1,655	1,719
	„	„	„			
Brown	756	391	352	134	116	251
	„	„	„			
Black	4,858	4,406	9,522	3,442	3,946	2,676
Tobacco, Manufactured	8,110	16,719	23,123	140,651	—	—
Cigars	—	1,349	3,999	—	—	—
	835	1,303	2,310	5,528	—	—
Tobacco, Cut	—	13,337	16,033	—	—	—
	7,274	728	779	135,122	—	—
Flour	—	295	432	—	—	—
	552	152	102	1,235	—	—
Fans, Folded and Round	—	—	—	1,198	—	—
	1,079	1,457	1,323	13	—	—
Brushes	—	689	828	493	—	—
Straw-Plaits	1,963	1,693	1,948	2,752	2,926	2,516
Lacquered Ware	3,295	4,106	4,885	5,640	6,284	5,768
Hats and Caps	—	185	210	—	—	—
	683	156	129	424	—	—
Umbrellas, European	3,980	2,270	2,284	2,918	—	—
Matting for Floor (*Hanagoza*)	2,183	3,217	2,090	2,460	3,039	4,960

In examining the foregoing table it is found that woven goods with the total value of 150 million *yen* comes at the top of the list, followed by cotton yarns with 94 millions, raw silk with 86 milions, and paper with 19 millions. Other commodities worth mentioning are sugar, earthenware, matches, lacquered ware, ships and boats, machines of all sorts, cement, glass ware, fancy matting, straw-plait, umbrella, bronze and copper ware, etc.

CHAPTER III.—Organization of Manufacturing Industry.

Manufacturing Establishments—Factories and Workpeople.

I. MANUFACTURING ESTABLISHMENTS.

General Review of the Progress.—The introduction of Western sciences and arts has revolutionized so to say the organization of our manufacturing industry, for besides imparting a powerful impulse to its development it has gradually modified many of our manufactures that formerely partook of the nature of domestic industry and caused them to gradually adopt the factory system including the use of elaborate machinery. This tendency has been especially marked since the Japan-China War, when our economic affairs reached a state of unparalleled activity and when factories and workshops on a large scale began to make their appearance in quick succession.

Number of Workshops.—The number of workshops employing not less than 10 workpeople and of manufacturing companies is as follows:—

Year.	No. of Workshops.		Total.	No. of Companies.	Ratio of Companies to Workshops.
	With Motor.	Without Motor.			
1900...	3,381	3,791	7,172	2,554	36%
1899...	2,763	3,788	6,551	2,253	34%
1898...	2,003	4,067	6,070	2,164	36%
1897...	1,971	4,346	6,317	1,881	39%
1896...	1,967	4,403	6,370	1,367	21%

It will be seen from the above that the ratio which manufacturing companies bear to workshop economy made a marked advance, having increased during the period under review from 21 to 36. The ratio will become higher if all the workshops belonging to one company are counted as one, for there are many companies each possessing more than one workshop.

Number of Manufacturing Companies.—The number of manufacturing companies and their financial position are shown as follows:—

NUMBER OF MANUFACTURING COMPANIES.

Year.	No.	Aggregate Capital.	Paid up Capital.	Reserves.
1901	2,477	219,249,806	166,293,003	24,057,360
1900	2,554	216,766,903	158,851,730	17,697,540
1899	2,253	222,673,634	147,783,280	13,467,802
1898	2,164	183,657,036	122,066,653	11,642,993
1897	1,881	165,232,633	105,381,106	7,581,535
1896	1,367	143,617,530	89,900,900	7,404,980

Manufacturing Companies Classified.—Those companies being classified according to kind, in the year 1900 joint stock companies numbered 986 with gross capital of 180 million *yen*, limited liability companies 1,176 with gross capital of 21 million *yen* and unlimited liability companies 315 with gross capital of 10 million *yen*. Paid up capital amounted to 130 million for the joint stock companies, 19 million *yen* for the limited liability companies, and 10 million *yen* for the unlimited liability companies. Of the capital invested in manufacturing business, that of joint stock constituted about 84 per cent. Of late the establishment of limited liability companies has become quite popular, as may be seen from the fact that their number in 1900 was more than double that of 1896. On the other hand the increase for joint stock companies did not exceed 68 per cent. during the same period. Below is given a list showing capital invested in their respective work by different kinds of companies.

CLASSIFIED LIST OF MANUFACTURING COMPANIES (returns for 1901).

(unit of thousand).

	No. of Companies.	Capital, Total Sum of.	Capital Paid up.	Reserves.
		yen.	*yen.*	*yen.*
Rice Cleaning	122	2,705	1,534	235
Milling	27	898	556	48
Sake	217	6,624	4,364	220
Beer	7	4,150	2,967	826
Soy and *Miso*	74	1,793	1,277	72
Salt	19	550	236	35
Sugar-Refining	6	3,688	2,648	520
Tea-Manufacturing	6	369	227	29
Medicine	52	3,865	3,106	243
Indigo	7	36	36	537
Dye-Stuff and Paint	6	598	259	12
Cotton	25	562	442	30
Cotton Spinning	58	41,593	36,108	5,655
Other Spinning	12	7,583	6,302	643
Raw Silk	321	7,723	5,635	376
Throwning	11	1,531	729	48
Hemp-Yarn	6	2,805	2,435	31
Tapes, Bands, etc.	9	179	149	2
Silk-Weaving	42	1,341	968	26
Weaving	54	2,796	2,187	151
Cotton-Weaving	64	5,154	3,469	252
Wool-Weaving	4	2,110	1,963	68
Knitting	5	637	389	7
Dyeing and Bleaching	41	579	381	20
Copper and Iron Ware	16	1,304	731	47
Nails and Iron Ware	6	600	551	4
Machineries, etc.	33	1,005	780	53
Shipbuilding	15	10,394	8,710	846
Casting	8	61	60	2
Tools and Implements	33	723	536	66
Vehicles	6	104	73	1
Railroad Cars and Wagons	5	2,650	2,171	38
Weight and Measures	18	276	186	8
Clocks and Watches	9	708	607	9
Porcelain and earthenware	40	907	611	19
Glass Ware	15	582	352	36
Gas-Work	4	4,762	3,131	248
Printing and Type Foundry	108	2,161	1,678	200
Paper-Mill	42	9,064	7,688	621

	No. of Companies.	Capital, Total Sum of. *yen.*	Capital Paid up. *yen.*	Reserves. *yen.*
Vermicelli and Maccaroni	13	40	27	522
Ice	22	1,112	605	44
Lemonade	29	295	192	14
Confectionary	13	431	232	841
Preserved Fruits and Meat	15	312	137	6
Provisions	7	38	21	581
Marine Products	11	146	111	5
Tobacco	155	12,189	11,245	139
Umbrellas and Parts of	8	201	154	70
Fans	7	80	46	1
Writing Brushes, Lead Pencils, etc.	7	82	31	350
Leather and Leather Ware	13	932	679	70
Candle-Making	5	180	180	29
Cords and Ropes	7	579	489	167
Kerosene-Boring	71	16,843	6,285	734
Coal-Mining	27	9,113	6,828	583
Cokes	3	67	32	16
Oils	25	1,608	1,045	233
Mats	13	101	63	5
Straw-Plaits	4	84	54	—
Safety-Matches	32	675	524	19
Incense-Sticks	5	15	15	212
Fuses	3	13	11	115
Sowing	30	634	495	37
Lacquer-Ware	12	277	199	2
Bobbins	3	138	125	6
Bamboo-Ware	10	123	87	5
Caps and Hats	6	676	543	58
Soaps and Toilet Goods	8	67	51	5
Tiles and Bricks	64	3,354	2,216	175
Cement	21	5,215	4,221	265
Cokes	6	1,014	716	58
Coal	29	321	262	11
Clay	4	203	190	6
Quarrying	11	281	150	9
Silk and Re-reeling	21	96	91	1
Cocoon Preserving	28	714	415	3
India-Rubber Ware	5	635	320	21
Fertilizers	19	1,495	981	154
Others	88	10,886	10,214	8,697
Total	2,413	219,249	166,293	26,550

Manufacturing Industries and Investments.—To examine the condition of all those establishments as to kind of business engaged in and the amount of capital invested, it is found that filature business with 321 establishments surpasses all others as to number, followed by *sake* brewing with 217 and tobacco manufacture with 155. As to amount of capital, the cotton spinning business with 41 million *yen* heads the list, followed by tobacco manufacture with 12,100,000 *yen* approximately, shipbuilding with 10,300,000 *yen*. In the amount of paid up capital, the spinning business with 36 million *yen* also comes at the top, followed by the tobacco manufacture with 11 millions. The capital of 11,400,000 *yen* invested in the weaving business and that of 7,700,000 *yen* in the filature business may also be regarded as being an important factor in our economic activity.

II. FACTORIES AND WORKPEOPLE.

(A.) FACTORIES.

Kind of factories and Number of workpeople.—The number of factories and workpeople employed will throw an important light on the condition of manufacturing industry. In 1900 the number of factories and work-shops employing not less than ten workpeople stood thus :—

THOSE RUN BY MOTORS.

Year.	No. of Workshop.	No. of Plant.	Horse Power.	Workpeople. Males.	Females.	Total.
1896	1,967	5,325	58,172	104,164	169,735	273,889
1897	1,971	5,446	68,331	117,081	174,154	291,235
1898	2,003	5,135	80,586	118,251	171,095	289,246
1899	2,763	4,166	62,131	96,181	184,111	280,292
1900	3,381	4,727	84,816	100,913	181,692	282,605

THOSE NOT RUN BY MOTORS.

1896	4,403	—	—	64,122	76,509	104,631
1897	4,346	—	—	66,777	82,554	149,331
1898	4,067	—	—	58,224	81,328	139,551
1899	3,788	—	—	41,938	70,679	112,617
1900	3,791	—	—	41,643	64,048	105,691

On examining the foregoing table it will be seen that the number of workshops run by motors is slightly larger than that of those not run by motors, the former corresponding to about 47 per cent. of the latter. The utilization or absence of motors depends of course to a great extent on the nature of manufacture conducted, for while in waving business, manufacture of earthenware and lacquer ware, and the brewing of sakê the workshops do not utilize in general labor-saving machines, motors are used in most cases in filature spinning, shipbuilding, machine-making, weaving of shirting, cement, paper-mills, beer-brewing, sugar-refining, printing, smelting, etc.

Five Classes of Factories.—To give further analysis about factories and workshops, they may be broadly divided into these five different kinds:—

1. Fibre workshops (raw silk, spinning, weaving, cord-making),
2. Machine workshops (machine-making, shipbuilding, furniture-making, casting.)
3. Chemical workshops (ceramics, gas, paper-mill, lacquering, leather-making, workshops for the manufacture of inflammable substances, artificial manures, drugs, etc.)
4. Miscellaneous workshops (brewing, sugar-refining, tobacco-manufacture, tea-curing, cleaning of grains, flour, lemonade. mineral water, confectionary, preserved fruits and vegetables, printing and lithograph, paper work, wood and bamboo ware, leather, feather ware, reeds and straw-plait ware, lacquer ware, etc.)
5. Special workshops (electricity and metallurgy.)

Of the foregoing kings of workshops, those in the fibre line using motors number 2,300 with the aggregate horse powers of about 38,000 and the aggregate number of workpeople of about 189,000. In number the fibre workshops constiuted 77 per cent. of the whole number of workshops using motors, in horse-power about 45 per cent. and in workpeople about 67 per cent. When those fibre workshops not using motor powers are counted in, this kind of workshops constitutes 57 per cent. of the whole number of workshops. The forgoing ratio will be seen from the appended table:—

A. RUN BY MOTORS.

	No. of Workshop.	Horse Power.	No. of Workpeople.
Fibre	2,393	38,571	189,180
Machine	230	5,050	25,502
Chemical	224	12,672	13,743
Miscellaneous	420	8,196	21,862
Special	114	20,223	32,318
Total	3,381	84,712	282,605

B. NOT RUN BY MOTORS.

	No. of Workshop.	No. of Workpeople.
Fibre	1,763	44,978
Machine	184	4,228
Chemical	701	24,744
Miscellaneous	1,041	26,827
Special	102	4,914
Total	3,791	105,691

FIBRE WORKSHOPS.—Fibre workshops as classified according to kind the following result is obtained:—

A. RUN BY MOTORS.

	No. of Workshop.	Horse Power.	No. of Workpeople.
Raw Silk	2,129	7,288	109,336
Spinning	153	25,437	63,388
Weaving	96	5,557	15,389
Others	15	289	1,067
Total	2,393	38,571	189,180

B. NOT RUN BY MOTORS.

	No. of Workshop.	No. of Workpeople.
Raw Silk	429	9,468
Spinning	29	645
Weaving	1,279	33,967
Others	26	898
Total	1,763	44,978

The foregoing table shows that in fibre workshops filatures run by motors constitute 88 per cent. of the whole number, and spinning mills 6.3 per cent., the two taking up 94 per cent. of the whole. Even in the whole number of motor-using workshops of all kinds, these two particular fibre workshops constitute 64 per cent. and 61 per

cent. in the whole number of operatives. The three kinds of business of raw silk, spinning and weaving constitute, when workshops both run by motors and not run by them are combined, 99 per cent. of the whole number of fibre workshops, and the ratio to the total number of workshops of all kings is as high as 57 per cent., and and in the total number of operatives 59 per cent. Thus fibre workshops may be regarded as forming the bulk of all workshops in Japan, and workshops engaged in the manufacture of raw silk, spinning and weaving the bulk of fibre workshops.

WORKSHOPS RUN ON A LARGER SCALE.—The scope of the business of a workshop does not necessarily depend on the number of operatives employed in it, and in making inquiries as to the relative scope of factory business according to the data supplied by the tables given above and also by taking some other factors into consideration, it is found that among fibre workshops, those that are run on a larger scale than others are spinning mills, power loom factories, and a small portion of filatures; among machine workshops, shipbuilding, vehicle-making, and machine-making; among chemical workshops, those engaged in alkali and cement-making and paper mills; among miscellaneous workshops, some of tobacco, beer, and sugar workshops. Large workshops are also found in the smelting business. In general, larger workshops are run either by the Government or by joint stock companies, while workshops run by private individuals or firms are generally on a small scale.

The following two tables will show those data in some details.

WORKSHOPS RUN BY MOTORS.

(Employing not less than 10 Workpeople).

Kind of Workshop.	No. of Workshop.	No. of Horse Power.	Workshop Employing more than 30 People.	No. of Horse Power.	Workshop Employing more than 50 People.	No. of Horse Power.
Fibre Industry...	2,392	38,571	1,486	37,612	871	35,422
Filatures	2,129	7,288	1,309	6,811	716	4,909
Spinning	153	25,437	111	25,110	105	24,995
Weaving	96	5,557	57	5,422	41	5,249
Others	15	289	9	269	9	269
Machinery	230	5,050	128	4,345	91	4,053
Machine-Making... ...	120	2,158	62	1,693	39	1,508
Shipbuilding	20	1,607	15	1,580	13	1,560
Vehicles	16	627	15	597	14	590

Kind of Workshop.	No. of Workshop.	No. of Horse Power.	Workshop Employing more than 30 People.	No. of Horse Power.	Workshop Employing more than 50 People.	No. of Horse Power.
Others	74	658	36	475	25	395
Chemical	224	12,672	115	10,853	78	9,720
Cement	37	2,617	26	2,484	22	2,408
Paper-Mills	47	6,743	36	6,651	25	5,971
Leather	4	47	3	39	2	29
Matches	5	52	5	49	5	49
Others	130	4,223	45	1,630	24	1,263
Miscellaneous	420	8,196	201	5,027	114	4,004
Brewery	28	480	14	327	6	243
Tobacco	112	581	55	444	39	385
Printing	84	2,516	61	1,547	37	1,392
Others	196	4,619	71	2,709	32	1,984
Special Workshops... ...	114	20,223	88	17,122	69	16,668
Smelting	104	8,930	85	8,634	66	8,180
Others	10	11,293	3	8,488	3	8,488
Total	3,381	84,713	2,018	75,087	1,223	69,867

Kind of Workshop.	Workshop Employing more than 100 People.	No. of Horse Power.	Workshop Employing more than 500 People.	No. of Horse Power.	Workshop Employing more than 1,000 People.	No. of Horse Power.
Fibre Industry	357	32,282	46	21,360	21	10,005
Filatures	235	2,359	3	26	—	—
Spinning	89	24,614	43	17,440	19	9,091
Weaving	31	5,149	11	3,894	2	914
Others	2	160	—	—	—	—
Machinery	48	3,080	8	1,616	5	1,323
Machine-Making ...	15	778	—	—	—	—
Shipbuilding	11	1,532	6	1,465	4	1,203
Vehicles	11	556	2	151	1	120
Others	11	217	—	—	—	—
Chemical	37	4,949	—	—	—	—
Cement	13	1,187	—	—	—	—
Paper-Mills	11	3,172	—	—	—	—
Leather	1	15	—	—	—	—
Matches	3	10	—	—	—	—
Others	9	565	—	—	—	—
Miscellaneous	41	3,104	5	150	—	—
Brewery	3	217	—	—	—	—
Tobacco	9	165	2	53	—	—
Printing	13	1,048	—	—	—	—
Others	16	1,674	3	97	—	—
Special Workshops ...	53	14,002	14	5,253	9	4,802
Smelting	51	7,855	14	5,253	9	4,802
Others	2	6,147	—	—	—	—
Total	535	57,420	73	28,379	35	16,130

WORKSHOPS NOT RUN BY MOTORS.

(Those employing not less than 10 people).

Kind of Workshop.	No. of Workshop.	Those Employing more than 30 People.	Those Employing more than 50 People.	Those Employing more than 100 People.	Those Employing more than 500 People.	Those Employing more than 1000 people.
Fibre Industry	1,763	388	157	39	1	—
Filature	429	67	18	6	1	—
Spinning	29	6	2	—	—	—
Weaving	1,279	302	193	133	1	1
Others	26	13	4	1	—	—
Machinery	184	28	1	1	1	—
Machine Making ...	27	5	3	—	—	—
Shipbuilding	19	6	3	1	1	—
Vehicles	6	3	---	—	—	—
Others	132	14	5	—	—	—
Chemical	701	240	133	47	1	—
Porcelain & Earthenware	149	17	7	4	—	—
Paper-mill	49	18	4	—	—	—
Leather	9	1	1	—	—	—
Matches	177	133	90	34	1	—
Others	317	71	31	9	—	—
Miscellaneous	1,041	240	77	22	1	1
Brewery	295	40	9	2	—	—
Tobacco	162	72	21	8	1	1
Reed and Straw-plaits	146	40	17	4	—	—
Lacquer-Ware	9	1	—	—	—	—
Others	429	87	30	8	1	1
Special Workshops ...	102	45	31	14	—	—
Smelting	102	45	31	14	—	—
Others	—	—	—	—	—	—
Total...	4,691	941	399	123	4	1

VI. WORKPEOPLE.

Male and Female Operatives.—In making a somewhat careful examination into the question of factory labor, it is found that, in workshops using motors, male operatives constitute about 100,000 out of the total of 280,000 approximately, the remaining 180,000 being female operatives. There is, therefore, a little over 35 per cent. of males and a little over 64 per cent. of females. When the figures for non-motor workshops are counted in, out of the total of 390,000 operatives male operatives constitute 142,000 or about 36 per cent. and female operatives 245,000 or 64 per cent.

General Age Classification of Operatives.—In regard to age classification, out of the total 280,000 working in motor-using workshops 260,000, that is over 92 per cent. are operatives of not

less than 14 years old. Of the remaining 8 per cent. the bulk, that is to say 82 per cent., consist of girls and only 18 of boys.

Workshops and Kind of Operatives.—The kind of operatives employed differs according to the nature of the workshops. In fibre workshops the majority of operatives are females and children, in machine workshops and special workshops adult males, and in chemical workshops adult males also, except in glass, paper, and match factories. No general remark can be made about the kind of operatives in miscellaneous workshops, but this much can be stated that there are no factories of this kind where a large number of female operatives or children are employed. Below is given a table showing the sex and age classifications of operatives in workshops employing not less than 10 people.

WORKSHOPS RUN BY MOTORS.

(Employing not less than 10 Workpeople).

Kind of Workshop.	Males.		Females.		Total.
	Over 14 Years old.	Under 14 Years old.	Over 14 Years old.	Under 14 Years old.	
Fibre Industry	22,592	1,462	148,731	16,395	189,180
Filatures	6,042	210	93,848	9,236	109,336
Spinning	13,152	1,104	43,248	5,884	63,388
Weaving	3,100	121	11,025	1,143	15,389
Others	298	27	610	132	1,067
Machinery...	24,662	312	493	35	25,502
Machine-Making	6,796	59	111	5	6,971
Shipbuilding...	10,260	85	10	—	10,355
Vehicles	4,500	7	—	—	4,507
Others	3,106	161	372	30	3,669
Chemical	9,986	487	2,979	291	13,743
Porcelain and Earthenware...	206	3	58	6	273
Glass Ware	313	154	51	—	518
Cement	3,314	157	479	—	3,950
Paper-Mills	2,694	34	1,394	75	4,197
Leather	245	—	—	—	245
Matches...	70	63	354	146	633
Others	3,144	76	643	64	3,927
Miscellaneous	13,889	810	7,164	999	22,862
Brewery...	1,435	18	220	27	1,700
Tobacco	1,490	90	3,791	421	5,792
Printing	4,478	455	540	186	5,659
Reed and Straw-Plaits ...	—	—	—	—	—
Lacquer-Ware	—	—	—	—	—
Others	6,486	247	2,613	365	9,711
Special Workshops	26,788	925	4,197	408	32,318
Smelting	26,293	925	4,197	408	31,823
Others	495	—	—	—	495
Total	97,917	3,996	163,564	18,128	282,605

WORKSHOPS NOT RUN BY MOTORS.

Kind of Workshop.	Males.		Females.		Total.
	Over 14 Years old.	Under 14 Years old.	Over 14 Years old.	Under 14 Years old.	
Fibre Industry	4,175	898	35,080	4,826	44,978
Filatures	763	11	8,081	613	9,468
Spinning	223	46	313	63	645
Weaving	2,983	783	26,264	3,937	33,967
Others	205	58	422	213	898
Machinery...	3,570	213	324	121	4,228
Machine-Making	563	12	—	—	575
Shipbuilding...	668	110	145	100	1,023
Vehicles	141	4	—	—	147
Others	2,198	87	177	21	2,483
Chemical	11,467	1,873	7,882	3,522	24,744
Porcelain and Earthenware...	2,388	136	589	40	3,153
Glass Ware	1,123	206	79	—	1,408
Cement	2,769	123	537	31	3,460
Paper-mills	593	131	516	102	1,342
Leather...	226	—	—	—	226
Matches...	1,942	1,197	5,684	3,180	12,003
Others	2,426	80	477	169	3,152
Miscellaneous	14,598	859	9,591	1,779	26,827
Brewery...	5,513	22	95	3	5,633
Tobacco...	1,448	69	4,775	714	7,006
Printing...	1,676	439	98	56	2,269
Reed and Straw-Plaits... ...	1,338	54	2,127	584	4,103
Lacquer-Ware	158	6	6	—	170
Others	4,465	269	2,490	422	7,646
Special Workshops	3,901	90	887	36	4,914
Smelting	3,901	90	887	36	4,914
Others	—	—	—	—	—
Total	37,710	3,933	53,764	10,284	105,691

Day and Boarding Operatives.—Operatives may further be divided into two kinds, day operatives and boarding operatives, the former residing in the vicinity of the workshops which they attend and the latter those who have been collected from distant places, the majority of them being females. Though the relative proportion of day operatives and boarders in workshops cannot admit of generalization, it may be stated here that the greater part of the latter

belongs to fibre workshops, or more especially filatures, spinning and weaving workshops. In some filature and spinning workshops the majority of operatives are day operatives, while in weaving shops about 70 to 80 per cent. are boarders, and this datum obtained from workshops of certain places may be applied in general to workshops of the same kind throughout the country.

Age and Sex Classification of Operatives for Special Kind of Workshops.—No accurate statement as to the age of the majority of operatives employed in any given kind of workshops can easily be elaborated, but broadly stated the greater part of operatives in filature factories are females of 16 to 22 years of age, the number of those from 22 to 30 coming next. Even the youngest are very rarely below 12 or 13. In general, females of from 14 or 20 constitute 50 per cent., those above 20 about 40 per cent., and those below 14 about 10 per cent. of the total number of operatives employed. In spinning mills also girls below 14 constitute a little over 10 per cent. of the whole number, those from 14 to 20 about 50, and those older about 40 per cent., of whom the majority are of 20 to 25 years old. The female operatives in power-loom factories do not differ from those of spinning mills in regard to the age ratio, and those in hand-weaving workshops are similar to those in filatures.

In shipbuilding, vehicle and machine workshops the workpeople employed are almost exclusively adult males, especially in those run on a large scale. Even when boys are employed they are mostly not less than 15 or 16 years of age and in very rare cases 12 or 13. In factories dealing in clock and watches, lamp accessories, shirt-buttons, umbrella-frames, etc., female operatives and children are sometimes employed, but those factories are all on a small scale, and the number of such operatives is small. In chemical workshops, and especially in glass factories boy apprentices of 12 to 13 years are employed to some extent. In some rare cases small number of boy-apprentices of about 10 years old is employed. In paper-mills not a small number of females and children is employed, while in match factories they constitute the bulk of workpeople, the youngest of whom being about 9 years old. This is also the case in tobacco factories, though the number of children under 10 employed in such

factories is smaller than the number employed in match factories. In printing workshops the majority are adult males, sometimes with a sprinkling of children of less than 14 years old.

Working-Hours.—In general the working-hours of operatives are 11 hours a day, but sometimes they extend as long as 16 or 17 hours. In cotton mills 12 hours are standard, both for day and night workers, they being made to take day and night work by turns every two days. In filatures the regulations hours are 13 to 14, in power-loom factories 12. But in hand-weaving workshops a great diversity prevailes, the general rule being 12 to 15, according to the season, though in some rare cases the hours are as long as from 16 or 17. In bigger workshops such as shipbuilding yards. vehicle, and machine shops, the working hours are far more regular, being in general 10 hours, with one or two hours of overtimes. In such chemical workshops as cement, glass, and paper in which work is carried on all through the 24 hours, 12 hours is a regular shift both by day and night. In general the regular working-hours in Japanese workshops may be put at 12, with overtime of one or two hours.

Wages.—Wages are paid in general by the day and according to the amount of work done, though payment by the month also prevails to some extent. In general the account is settled once or twice a month, though in some cases it is settled every six months or once a year. In filature the payment is made according to the amount of work done, and by the month, though in some places a yearly account system prevails. In cotton mills those who receive daily wages constitute about 40 per cent. of the whole and those who receive payment according to the amount of work done, about 60 per cent. The latter mode of payment is becoming more and more fashionable. The account is settled generally twice a month. In hand-weaving workshops the mode of payment is similar to that which prevails in filature, while in power-loom workshops it is similar to that in cotton mills. In such machine workshops as shipbuilding, vehicle and machine, daily payment of wages is general, but at times a piece of work is given out as a job contract to one or more artisans. The account is settled once or twice a month. In match workshops payment is made according to the amount of work done,

as is also the case in tobacco workshops, while in printing workshops the daily wage system and the payment by the amount of work done equally prevail. In general this latter mode is adopted in all those workshops where the amount of work done by workpeople can be definitely computed.

The rate of wages is about 30 *sen* a day for adult males employed in such fibre workships as filature, cotton mills and weaving-shops, while that of females is about 20 *sen*. In machine workshops engaged in making ships, vehicles and machines the rate is generally high, 50 to 60 on an average, and a skilled artisan gets more than 1 *yen*. In match factories, on the other hand, the rate is much lower, being 12 to 20 *sen* for ordinary female operatives, and 5 to 13 *sen* for little girls. In tobacco factories and printing-shops ordinary females get about 20 *sen* and males about 40 to 50 *sen*.

CHAPTER IV.—Manufacturing Establishments by the Central and Local Governments.

Encouragement and Protection by Central Government —Encouragement and Protection by Offices.

I. ENCOURAGEMENT AND PROTECTION BY CENTRAL GOVERNMENT.

Introduction. of Western Industries.

General Remarks. — The encouragement and protection of industrial enterprises were carefully looked after even before the Restoration. This was especially the case with the three daimiates of Satsuma, Mito and Saga. They established in the era of Ka-ei (1848–1853) an arsenal after a Western model, and began to turn out guns of foreign pattern. Satsuma even started the manufacture of porcelain and glass-ware and also the work of shipbuilding, all after the Dutch model, while coming down to the era of Bunkyu (1861–1863) we find that it sent for a set of spinning machines to England, and established a pioneer mill in its territories. The construction of a shipyard on Ishikawajima by the Lord of Mito is also a noteworthy event. Nor did the Tokugawa Shogunate neglect to introduce a similar innovation. In fact the shipbuilding industry received from it full attention. During the era of Ansei (1854–1859) it constructed a shipyard at Aku-ura, Hizen, and a similar undertaking was soon arranged at Yokosuka, Sagami, only the Restoration took place before it had been completed. This partially completed shipyard was finished by the Meiji Government which in 1874 constructed another shipyard at Tategami, Hizen. The Yokosuka yard was afterward transferred to the Navy which has since raised it to its present state of efficiency and perfection. The two shipyards in Hizen were hired out to the Mitsubishi Firm in 1884 and finally sold to it three years after, so that the two are now

known by the name of Nagasaki Shipbuilding Yard belonging to the same firm.

The movement started by the Tokugawa and feudal princes by way of encouraging industry and manufactures was vigorously taken up by the Meiji Government. It established in 1872 a model filature at Tomioka, Gumma-ken, with the object of introducing the use of labor-saving contrivance in the manufacture of raw silk, while the operatives trained at this factory spread all over the principal silk districts the art of reeling to the new style. The filature itself supplied a model to all silk districts and similar establishments rose in quick succession. An undertaking next adopted by the Government in a similar line was the establishment in 1877 at Shimmachi, Gumma-ken, of a silk spinning mill to utilize silk waste and waste cocoons. This innovation also served the salutary purpose of encouraging similar enterprises on the part of private individuals. Further, in a similar way, a woollen factory was established in the same year at Senju, suburb of Tokyo, and ten years after private woollen factories began to make their appearance in several places. The cotton spinning business also received the attention of the Government which established in 1881 a model mill at Nukada-gun, Aichi-ken, and Aki-gun, Hiroshima-ken. About that time 10 sets of spinning plant each of 2,000 spindles were sent for to England and handed over to be paid in ten years instalments to people of different places who were interested in the business. The project that appeared in 1883 in Shiga-ken about hemp spinning received help from the Government which loaned to the promoters the fund required for purchasing a plant. Three years later this project developed as Hemp Spinning Mill established in that province. The establishment of the Hokkkaidō Hemp Company at Sapporo in 1887 received much help from the Government which besides extending to it various conveniences also granted a state aid for six years.

Model Filature

Woolen Factory.

Spinning Mill.

Hemp Spinning.

Further, it was the Government that first started the work of manufacturing cement, having established in 1875 a cement factory at Fukagawa, Tokyo, where the burning of white brick

Cement. was undertaken as a subsidiary work. Then the establishment of a glass factory in April 1876 at Shinagawa, Tokyo; the creation of a paper-mill section in the Printing Bureau and the manufacture of foreign style paper besides **Glass Factory.** the improvement of the native style paper (the durable Japanese paper known as "Kyokushi" is the invention of the Bureau); launching of the work of machine-making, of soap-making, type-founding, of making **Paper Mill.** porcelain in the Western style, of paint-making, also the establishment, as before mentioned, of filatures and the making of arrangements for training female operatives in all such new forms of industry—all these have imparted a poweful impulse to the progess of our manufactures throughout the country. Meanwhile factories modelled after those established by the Government began to be started by our people, and the Government no longer perceiving the necessity of maintaining its model factories began from about 1880 to sell all of them with the exception of the Senju Woollen Factory.

As a means of encouraging the advance of industry and manufacture, the Government has not neglected to open exhibitions at home and to participate in those opened abroad. In **Exhibitions.** 1878 First Domestic Exhibition was held in Tokyo where the succeeding two similar undertakings were also carried out. The Fourth Exhibition opened in 1895 was held in Kyoto and the Fifth in Osaka last year. Besides, Japan participated in the world's fairs held in Vienna, Philadelphia, Chicago and Paris, not to speak of various other international exhibitions of limited scope.

In the matter of legislative measures of protecting and furthering industrial interest, the regulations relating to patents, designs and trade-marks; the establishment of silk conditioning **Other Measures** house; the enactment of industrial interests guilds, **of Industrial** etc. may be mentioned. Further, the sending out of **Protection** experts to all the provinces to encourage by lectures and by practical experiments industrial enterprises there; the organizing of the industrial laboratory and of the *saké* brewing laboratory, the sending of student manufacturers and merchants

to foreign countries to investigate the condition of manufactures and trade in those countries economically related to Japan, the hiring out of latest dyeing and weaving machines specially imported for the purpose to the principal dyeing and weaving districts such as Kyoto, Ashikaga, Kiryu, Fukui, Toyama, Yonezawa, etc.—all these measures have contributed to further our manufacturing industry to the present state of marvellous progress within a comparatively short space of times.

II. PROTECTION AND ENCOURAGEMENT BY LOCAL OFFICES AND PUBLIC BODIES.

The local offices and local civic bodies have followed the example set by the central Government and adopted measure for protecting and encouraging manufactures in their respective districts. The Local Office of Kyoto distinguished itself above all others in this respect, for as early as 1870 it established a chemical laboratory which attended to the business of keramics, dyeing, soap-making, etc.; while, in 1872, it sent a number of weavers to Lyon, introduced for the first time a number of Jacquard and Butten looms into the country; established a weaving factory after the Western style in 1874 and a dyeing factory in the following year, and thus laid the foundations of attaining that eminence which Kyoto occupies to-day in the art of weaving and dyeing, or rather continues to occupy, for Kyoto was pre-eminent in these lines before. Other local offices equally adopted similarly salutary measures and the expenses they have incurred on this account must amount to a big figure. Those measures generally took the form of establishing experimental laboratories or training schools, opening local competitive fairs, the hiring out of costly machines, or the advancing of money to enable the manufacturers to purchase them.

CHAPTER V.—Industrial Education.

History—Existing Condition—Apprentice System.

I. HISTORY.

General Remarks.—The history of the progress of industrial education after the advent of the Meiji Government may be considered as dating from the creation in 1871 of the Engineering College, subsequently united with the Imperial University of Tokyo-where the subjects of civil engineering, mechanical engineering, ship, building, electrial engineering, architecture, chemical technology, mining, metallurgy, etc. were taught. It followed as a matter of course that the graduates from all those course contributed very much to the progress of industry and to the diffusion of technical knowledge. The establishment in 1881 of Tokyo Polytechnique School, now known as Tokyo Higher Technical School, and the teaching of the subjects of dyeing, weaving, keramics, mechanical engineering, etc. has also proved similarly beneficial in the development of our industry. Similar institutions were subsequently created both by the Government and by the local offices, so that at the end of 1900 there were, to mention only institutions of higher grade, the Engineering College of the Tokyo Imperial University, the Science and Engineering College of the Kyoto Imperial University, the Tokyo Higher Technical School, the Osaka Higher Technical School, and last of all—it was created quite recently, the Kyoto Higher Technical School. The technical schools of all grades throughout the country numbered in the year in question no less than 1,008 all contributing to the common cause of furthering technical knowledge among our people and promoting the technical and manufacturing industries.

This progress of technical education enabled Japan to gradually dispense with the service of foreign experts, and though some such

are still to be found here, the number is insignificant compared to what it was before.

II. EXISTING CONDITION.

Protection to Technical Education.—With the object of diffusing technical knowledge and of imparting a general idea of science to apprentices, young mechanics and future manufacturers, the Government has been granting from the year 1894 states aid to the amount of 150,000 *yen* every year, and has also made arrangement for turning out teachers qualified to undertake the teaching of those young people.

Number and Kind of Technical Schools.—The higher grade schools of this standing, some deriving the aid from the fund in question and others not numbered 18, in June 1901.

Quite recently a technical school was started both in Okayama-ken and Ehime-ken.

The foregoing schools, which, by the way, are maintained at local or communal expenses or by private individuals, are classified as follows according to the subjects taught:—

Kind.	No. of Schools.
Dyeing and Weaving	10
Metal and Wood Work	2
Painting, Metal-Inlaying, Design and Carving	1
Painting, Lacquer and Metal-Work, Keramics, Dyeing and Weaving	1
Carving, Lacquer-Work, Casting	1
Wood and Metal Work, Dyeing and Weaving	2
Wood and Metal-Work and Keramics	1
Total	18

The schools teaching dyeing and weaving exclusively are 10 in number, but when other schools which teach dyeing and weaving side by side with other subjects are counted in, the number increases to 13. There are seven schools in which wood and metal-work are taught, if we combine those that are exclusively teaching them with others that teach the same subjects side by side with other subjects.

Each of the other subjects is taught at one school exclusively or two subjects only are taught in combination at one school.

Apprentice Schools.—The apprentice schools, all of them deriving aid from the said fund, numbered 21 in the same year.

Classified according to kind those schools can be divided as follows :—

Kind.	No. of Schools
Dyeing and Weaving	3
Metal and Wood-Work	5
Lacquer-Work	4
Pottery	5
Shipbuilding	1
Others	3
Total	21

Differing from the preceding case, here metal and wood-work and pottery are at the head of the list each with five schools, followed by those of lacquer-work, dyeing and weaving.

Commercial and Technical Continuation Schools.—Commercial and technical continuation schools next demand attention, for these subjects occupy at present a very important place in short-course commercial and technical education.

These number 34, many of them receiving grant-in-aid from the said fund.

Of the schools mentioned above, some of which are maintained by communities, others by private individuals, those that are exclusively devoted to technical matters are 12, those that combine agricultural, technical and commercial matters 16, the remaining 6 being of a miscellaneous character. Most of those schools are attached to primary schools for the benefit of those who cannot attend school in the daytime.

III. APPRENTICE SYSTEM.

Formerly the apprentice system prevailed universally in all branches of technical and manufacturing work, but with the introduction of the Western system of manufacture and technical work this

custom has began to lose its importance. The scope of the apprentice system has gradually dwindled down, and at present it only retains some semblance of its former status in such ancient lines of business as hand-weaving, pottery, and the dyeing business. It is true even in new branches of work this apprentice system is found, but it is only in factories of small scope. Sometimes even in big factories the system is retained to some extent, as master craftmen engaged in shipbuilding and other works often take under them a number of boys whom they employ at the factories they attend. However, taking all things into consideration, and especially with the greater necessity of division of labor in most branches of technical work and manufacture, the days of the apprentice system are doomed, to be superseded by regular mode of education.

CHAPTER VI.

MANUFACTURING CORPORATIONS.

That combination of persons having common interests in the prosperity of a given branch of manufacture and industry, so universal nowadays, was first seen in this country in the organization in October 1882 of the spinners' union which exists to-day in a somewhat modified form. It undertakes all matters judged to further the common interests of the members; dispatches, for instance, merchants or experts to Bombay to inspect the condition of the cotton market or of the cotton crop, enters into contract with steamship companies for the import of raw cotton from Bombay. Matters about the regulations of staple commodities guilds have already been mentioned elsewhere, and it is sufficient to state here that at present the organized bodies created for protecting their own respective interests number 192 in all.

CHAPTER VII.

TECHNICAL ASSOCIATIONS.

Scientific Associations relating to manufacture and technical affairs exist in large numbers, the principal of them being :—

Name.	Located in.
Engineering Society	Tokyo.
Japan Weaving Society	„
Tokyo Carving Society	„
Electric Society	„
Japan Lacquer-Work Society	„
Japan Keramic Society	„
Technological Society	„
Mechanical Engineering Society	„
Shipbuilding Society	„
Society of Chemical Technology	„
Tokyo Export Metallic Ware Society	„
Japan Metallic Art Society	„
Central Weaving Society	Nagoya.

Most of the foregoing societies publish proceedings, some of these publications being :—

Proceedings of the Engineering Society, the Japan Keramic Art Society, the Technological Society, the Mechanical Engineering Society, the Shipbuilding Society, the Society of Chemical Technology, etc.

APPENDIX.

PLACES OF PRODUCE OF STAPLE COMMODITIES, THEIR OUTPUT AND FOREIGN MARKETS.

"HABUTAYE" (unit of *yen*).

Principal Places of Produce.	1896.	1897.	1898.	1899.	1900.	1901.
Kyōto	308,942	372,263	834,109	853,877	1,063,994	674,077
Niigata... ...	76,097	124,474	298,563	452,360	409,094	499,047
Saitama ...	221,989	232,838	276,452	555,955	338,071	81,180
Gumma ...	2,945,905	3,183,234	3,394,275	1,349,827	2,361,305	2,737,356
Tochigi ...	2,005,564	2,116,282	2,084,150	460,109	93 155	37,327
Miye	21,048	21,499	22,262	39,729	81,230	102,848
Aichi	21,015	47,243	57,130	313,089	371,076	226,279
Gifu	1,752,427	1,040,154	1,184.141	998,065	832,349	958,720
Nagano... ...	109,614	229,525	178,388	134,332	181,780	237,466
Miyagi	23,716	47,755	114,615	137,724	180,293	143,016
Fukushima ...	362,098	666,588	1,365,608	2,265,435	2,719,335	2,746,124
Yamagata ...	37,604	78,625	90,400	163,542	209,800	327,648
Fukui	6,004,426	7,400,219	8,529,420	13,786,352	11,651,264	13,669,578
Ishikawa ...	789,455	1,150,014	1,907,360	5,400,305	3,559,017	4,361,401
Toyama ...	412,656	786,274	946,424	2,255,737	1,383,537	3,221,946
Tottori... ...	20,316	21,883	53,295	62,051	59,264	27,683

Foreign markets:—Australia, Austria-Hungary, Belgium, British America, British India, China, Korea, Dutch India, Egypt, France, Germany, Great Britain, Hawaii, Hongkong, Italy, Mexico, Philippine Islands, Russia, Spain, Switzerland, Turkey, United States of America.

"KAIKI" (unit of *yen*).

Kanagawa ...	58,364	10,770	117,188	83,950	63,560	209,550
Gumma... ...	1,233,710	1,415,986	1,493,910	1,812,379	2,045,624	262,740
Tochigi ...	234,670	1,411,268	1,441,896	1,922,316	339,448	1,509,928
Yamanashi ...	2,081,774	2,245,388	1,969,296	2,435,601	5,017,206	2,260,751

Foreign markets:—Australia, Belgium, British America, British India, China, Korea, France, Germany, Great Britain, Hawaii, Holland, Hongkong, United States of America.

CREPE SILK (unit of *yen*).

Kyōto	5,540,155	5,636,083	5,326,858	8,362,433	6,754,236	5,657,700	
Hyōgo	70,000	70,750	72,500	88,577	121,600	116,100	
Gumma ...	89,919	107,411	100,343	157,485	226,252	161,828	
Tochigi ...	26,671	5,330	3,135	41,968	375,222	252,473	
Shiga	2,349,283	2,414,641	2,377,831	2,446,291	1,410,701	1,066,645	
Gifu	249,128	625,332	286,723	270,633	364,438	404,553	
Nagano... ...	34,734	50,103	588,827	51,407	71,049	87,283	

Foreign markets:—Australia, British India, China, Korea, Dutch India, France, Great Britain, Hawaii, Holland, Philippine Islands, Russian Asia, Turkey, United States of America.

SILK HANDKERCHIEFS (unit of *yen*).

Kyōto	—	—	—	1,282,515	905,652	unknown
Kanagawa ...	487,567	3,390,145	3,555,115	—	—	396,076
Gumma... ...	—	—	—	39,649	48,738	unknown
Aichi	—	816,808	485,165	—	277,783	221,089
Shizuoka ...	—	—	—	52,900	127,964	102,884
Gifu	25,560	7,286	51,993	55,700	69,400	771,000
Fukui	30,000	138,990	15,416	—	58,986	54,756
Ishikawa ...	63,349	—	—	18,225	43,330	unknown

Foreign markets:—Australia, British America, Brtish India, China, Denmark, Egypt, France, Germany, Great Britain, Hawaii, Hongkong, Italy, Mexico, Russia, Philippine Islands, Russian Asia, Spain, Turkey, United States of America.

SILK GOODS (unit of *yen*).

Kyōto	611,555	274,737	324,514	325,273	284,857	305,156
Ishikawa ...	—	—	—	40,000	7,200	unknown

Foreign markets:—As above.

COTTON YARNS (unit of *kwan*).

Tokyo	2,213,766	2,129,863	2,098,139	2,278,953	2,178,572	2,010,697
Kyōto	194,072	363,420	701,694	821,880	657,507	557,495
Ōsaka	8,476,015	9,733,589	11,049,921	12,264,578	10,705,686	11,178,814
Hyōgo	1,048,431	3,034,838	5,287,532	4,954,766	4,383,584	4,705,745
Nara	466,289	383,682	667,377	1,114,763	881,536	909,610
Miye	1,511,300	1,578,389	1,829,658	2,380,858	1,560,653	1,718,238
Aichi	1,265,113	1,735,323	1,868,036	2,242,658	2,547,988	2,566,816
Okayama ...	1,878,067	3,030,852	3,741 825	3,743,899	3,342,403	3,216,081
Hiroshima ...	493,769	534,658	850,640	912,591	1,112,360	1,152,441
Wakayama ...	434,446	495,730	667,734	791,763	864,265	764,888
Kagawa ...	—	95,505	328,980	363,557	250,740	308,195
Ehime	431,882	561,824	580,405	704,740	610,320	647,490
Fukuoka ...	990,467	1,148,444	1,493,243	1,681,073	1,408,401	1,459,143

Foreign markets;—British India, China, Korea, French India, Hongkong, Philippine Islands, Russian Asia.

WHITE COTTON CLOTH (unit of *yen*).

Principal Places of Produce.	1896.	1897.	1898.	1899.	1900.	1901.
Kyōto	172,146	230,053	199,676	133,083	132,117	132,485
Ōsaka	1,322,242	1,377,983	2,045,027	2,250,525	3,092,800	3,069,175
Hyōgo	194,953	191,547	148,718	92,244	139,140	156,934
Niigata... ...	123,574	133,222	106,776	114,281	374,699	297,202
Saitama ...	761,373	617,575	511,234	587,902	633,217	555,287
Ibaragi	97,709	38,497	42,296	74,110	50,045	41,350
Tochigi ...	56,260	86,038	58,706	176,901	87,714	85,875
Nara	1,161,062	1,140,012	1,196,287	1,580,306	1,377,246	1,027,642
Miye	72,695	317,852	303,722	128,301	182,404	158,127
Aichi	3,555,901	4,357,627	5,182,886	5,198,111	6,260,721	5,263,659
Shizuoka ...	36,430	32,324	25,754	37,683	72,616	70,248
Toyama ...	119,789	87,729	15,468	219,535	160,938	40,645
Okayama ...	112,655	146,156	235,007	237,171	484,504	575,999
Hiroshima ...	231,023	176,949	162,654	208,700	218,369	211,735
Yamaguchi ...	260,159	146,584	130,077	73,001	132,888	51,244
Wakayama ...	200,178	215,254	228,217	205,279	193,247	165,845
Kagawa ...	106,887	108,520	93,985	147,399	163,351	169,806
Ehime	908,256	166,064	3,108,010	802,148	1,035,493	715,003

Foreign markets :—China, Korea, Hongkong.

GREY SHIRTING (unit of *yen*).

Ōsaka	419,370	406,695	538,765	601,564	1,106,736	1,230,373
Wakayama ...	—	109,029	162,444	113,800	183,695	183,788

Foreign markets :—British India, China, Korea Hongkong.

T.-CLOTHS (unit of *yen*).

Ōsaka	—	—	—	206,858	393,044	unknown
Miye	—	—	306,447	135,000	502,188	„

Foreign markets :—China, Korea, Hongkong.

COTTON FLANNEL (unit of *yen*).

Kyōto	1,991,013	1,803,634	2,480,254	3,409,779	3,757,642	2,626,334
Ōsaka	646,997	404,719	526,877	556,524	761,671	593,226
Hyōgo	99,586	74,767	99,889	94,403	102,005	72,270
Aichi	19,529	27,799	26,467	55,539	64,285	53,200
Shiga	72,343	134,018	88,745	77,475	133,145	77,071
Toyama ...	5,593	13,700	13,153	2,800	61,740	27,050

COTTON FLANNEL (unit of *yen*).

Okayama ...	74,110	162,276	191,330	270,190	242,964	145,635
Hiroshima ...	69,689	59,002	39,378	78,664	53,354	58,049
Wakayama ...	3,511,764	4,137,745	5,260,376	3,237,217	3,440,709	3,259,438
Tokushima ...	575,204	659,643	100,148	389,441	340,882	369,913
Ehime	161,218	39,241	79,036	444,863	514,753	743,793

Foreign markets :—British India, China, Korea, Hongkong, Philippine Islands, Russian Asia.

COTTON CREPE (unit of *yen*).

Gumma... ...	77,566	73,194	51,639	96,980	183,860	83,116
Tochigi... ...	419,892	645,164	593,578	1,603,226	941,931	757,704
Nara	6,780	62,176	58,534	94,338	50,318	63,312
Aichi	6,220	890	60	78,201	128,910	35,125
Shiga	149,626	122,465	158,526	180,275	364,242	248,182
Toyama ...	21,810	935	1,396	24,794	71,851	71,380
Shimane ...	75,783	92,993	92,477	123,273	183,880	126,279
Yamaguchi ...	235,702	152,484	145,689	169,454	213,251	72,087
Tokushima ...	237,301	45,637	107,929	131,505	198,871	94,463

Foreign markets :—Australia, British India, China, Korea, Germany, Great Britain, Hawaii, Hongkong, Philippine Islands, Russian Asia, United States of America.

MATCHES (unit of *yen*).

Tokyo	283,265	265,919	207,040	216,874	226,979	171,388
Ōsaka	1,055,562	1,236,498	869,691	999,665	842,403	1,695,808
Hyōgo	3,166,541	3,585,523	3,899,994	2,559,861	2,997,327	5,954,888
Niigata... ...	60,774	67,051	65,849	48,050	68,260	62 567
Aichi	381,489	837,045	825,998	1,407,581	943,089	667,680
Shizuoka ...	63,520	43,542	62,313	68,306	128,644	88,831
Okayama ...	21,429	36,774	32,182	57,348	65,084	47,702
Hiroshima ...	84,248	140 055	160,934	185,865	222,277	206,040
Kagawa ...	106,778	118,055	80,660	127,923	186,593	147,500

Foreign markets :—Australia, British India, China, Korea, Hongkong, Philippine Islands, Russian Asia, United States of America.

MATS (unit of *yen*).

Ishikawa ...	12,235	59,855	36,894	16,481	66,876	199,276
Okayama ...	779,557	1,126,258	659,874	1,088,603	1,367,332	3,117,035
Hiroshima ...	676,512	1,409,277	861,009	744,475	887,741	898,535
Kagawa ...	63,406	48,373	42,849	49,874	66,701	112,989

Principal Places of Produce.	1896.	1897.	1898.	1899.	1900.	1901.
Fukuoka ...	229,482	271,492	220,404	420,779	479,439	518,540
Ōita	320,414	218,739	171,302	53,043	75,279	30,329

Foreign markets:—Australia, British America, British India, China, Korea, France, Germany, Great Britain, Hawaii, Holland, Hongkong, Italy, Philippine Islands, Russian Asia, United States of America.

STRAW-PLAITS (unit of *yen*).

Tokyo	126,360	96,000	114,600	69,000	62,500	64,000
Aichi	333,230	201,144	344,532	582,936	467,725	355,071
Okayama ...	1,294,727	1,043,941	1,193,094	1,772,807	1,796,513	1,552,334
Hiroshima ...	117,912	100,052	81,170	56,778	76,028	102,312
Kagawa ...	87,147	115,968	147,109	119,031	378,686	328,410

Foreign markets—Australia, Belgium, British America, France, Germany, Great Britain, Hawaii, Hongkong, Italy, Philippine Islands, United States of America.

PORCELAIN AND EARTHENWARE (unit of *yen*).

Tokyo	49,572	55,591	51,891	40,042	70,953	72,453
Kyōto	438,375	360,413	366,563	528,121	705,339	526,051
Kanagawa ...	17,200	15,000	15,000	143,300	152,900	134,950
Hyōgo	127,335	134,893	134,616	131,158	180,883	197,187
Nagasaki ...	115,991	102,677	82,210	76,930	107,770	96,792
Tochigi ...	40,082	46,959	53,399	49,208	53,609	59,539
Miyè	88,854	98,231	97,035	86,083	145,687	152,450
Aichi	1,541,954	1,571,761	1,494,864	1,363,563	2,171,404	2,397,555
Shiga	54,477	111,730	105,703	123,603	127,238	154,278
Gifu	1,177,573	1,155,962	878,415	972,944	1,004,836	1,237,740
Fukushima ...	109,837	135,922	139,872	162,784	182,369	174,671
Ishikawa ...	239,381	176,267	248,947	308,362	322,183	214,140
Shimane ...	67,431	80,893	86,570	103,826	122,509	119,113
Okayama ...	37,330	35,996	45,357	431,163	79,552	85,540
Yamaguchi ...	57,716	70,008	76,688	109,254	120,103	128,560
Kagawa ...	30,247	29,048	36,678	44,054	55,222	59,800
Ehime	105,937	108,705	92,609	118,751	191,800	174,300
Saga	623,510	529,465	612,535	692,224	649,915	487,991

Foreign markets:—Australia, Belgium, British America, British India, China, Korea, Denmark, Dutch India, Egypt, France, French India, Germany, Great Britain, Hawaii, Holland, Hongkong, Italy, Mexico, Philippine Islands, Russia, Russian Asia, Siam, Spain, Sweden and Norway, Turkey, United States of America.

UMBRELLA (unit of *yen*).

Tokyo	2,087,436	981,193	1,378,620	1,486,950	1,534,432	unknown
Kyōto	—	—	—	200,000	210,000	190,000
Ōsaka	1,876,994	2,181,064	2,201,888	2,458,519	1,095,325	1,164,564
Kanagawa ...	16,425	18,709	4,990	5,482	6,433	7,750
Nagasaki ...	—	39,868	50,010	51,522	110,500	90,000
Toyama ..	—	31,320	52,000	33,880	25,200	25,500

Foreign markets :—British India, China, Korea, Hawaii, Hongkong, Philippine Islands, Russian Asia, United States of America.

LACQUER-WARE (unit of *yen*).

Tokyo	27,992	30,829	28,887	42,408	85,652	43,051
Kyōto	260,000	532,400	425,920	686,076	610,422	384,846
Ōsaka	74,186	171,224	134,360	119,845	149,297	213,169
Kanagawa ...	230,192	232,003	480,695	358,995	350,755	202,490
Hyōgo	37,520	35,551	34,584	33,993	52,376	40,390
Niigata... ...	63,763	55,976	53,422	57,796	89,704	119,638
Nara	35,136	40,636	55,215	65,462	84,954	82,204
Miye	39,775	60,051	71,939	53,293	138,465	183,444
Aichi	85,330	118,850	104,530	105,392	245,892	232,505
Shizuoka ...	385,720	248,960	452,600	530,600	610,200	545,740
Shiga	113,285	180,265	228,181	227,398	244,563	234,545
Nagano... ...	104,749	98,464	86,471	182,104	133,097	264,284
Miyagi	38,447	45,522	49,220	51,005	63,082	77,849
Fukushima ...	218,059	296,470	308,056	429,752	459,290	330,800
Yamagata ...	48,634	52,905	57,008	60,398	66,150	78,395
Fukui	64,128	75,554	77,721	117,223	136,551	154,985
Ishikawa ...	359,194	464,724	450,851	499,650	639,160	681,927
Toyama ...	96,525	110,735	148,694	169,879	164,842	207,430
Hiroshima ...	62,400	37,318	127,150	152,425	126,503	113,518
Wakayama ...	577,792	781,133	894,590	1,202,400	1,303,612	1,049,388
Tokushima ...	80,045	79,125	72,760	14,400	74,400	76,000
Kagawa ...	26,242	64,735	133,598	131,525	129,083	50,005
Ehime	72,685	74,057	142,115	151,541	92,826	100,260

Foreign markets :—Australia, Belgium, British America, British India, China, Korea, Denmark, Dutch India, Egypt, France, French India, Germany, Great Britain, Hawaii, Holland, Hongkong, Italy, Philippine Islands, Russia, Russian Asia, Spain, Turkey, United States of America.

FANS, FOLDED AND ROUND (unit of *yen*).

Principal Places of Produce.	1896.	1897.	1898.	1899.	1900.	1901.
Tokyo	—	—	—	34,488	43,676	unknown
Kyōto	686,500	583,524	480,312	381,437	326,142	326,920
Ōsaka	177,848	272,355	263,396	342,275	77,314	62,759
Aichi	353,532	321,190	304,288	334,581	237,234	223,920
Gifu	15,340	51,028	55,892	32,817	33,102	95,176
Nara	—	—	—	13,800	14,640	unknown
Toyama ...	—	—	—	—	3,456	3,054
Hiroshima ...	—	—	—	106,292	6,150	6,610
Yamaguchi ...	—	—	—	3,660	45,530	1,718
Wakayama ...	—	—	—	—	7,253	7,248
Kagawa ...	178,932	182,029	180,710	233,240	232,910	232,973
Fukuoka ...	—	—	—	1,062	6,200	7,240
Ōita	—	—	—	3,140	3,900	4,350
Saga	—	—	—	974	1,524	4,882
Kumamoto ...	19,887	22,111	19,050	32,754	15,325	20,362
Kagoshima ...	—	—	—	3,600	3,124	2,280

Foreign markets:—Australia, British America, British India, China, Egypt, France, Germany, Great Britain, Hongkong, Italy, Mexico, Philippine Islands, Spain, United States of America.

RUGS (unit of *yen*).

Ōsaka	1,121,147	1,140,014	943,578	1,006,294	1,739,354	715,009
Hyōgo	25,195	135,695	67,813	12.658	14,710	unknown
Saga	—	—	—	—	2,142	4,000

Foreign markets:—Australia, Belgium, British America, British India, China, Korea, France, Egypt, Germany, Great Britain, Hawaii, Holland, Hongkong, Philippine Islands, United States of America, Russian Asia.

WOODEN WARE (unit of *yen*).

Kanagawa ...	389,725	23,305	25,470	—	25,000	unknown
Miyagi	—	24,596	33,335	4,937	—	„
Shiga	—	—	—	—	39,502	32,425
Ishikawa ...	27,500	33,300	43,523	—	—	unknown
Kumamoto ...	20,235	44,954	41,077	—	—	„

Foreign markets:—Australia, British America, British India, China, Korea, Dutch India, France, Germany, Great Britain, Hawaii, Hongkong, Italy, Philippine Islands, Russian Asia, Russia, United States of America.

PAPER (unit of *yen*).

Tokyo	283,855	310,541	325,204	711,617	573,952	831,087
Kyōto	79,415	95,414	141,356	188,267	155,133	77,510
Ōsaka	40,885	45,741	31,992	41,263	65,104	42,759
Hyōgo	304,274	685,342	351,401	543,468	538,292	533,270
Niigata... ...	43,493	55,370	77,722	40,680	70,242	72,751
Saitama ...	209,387	215,790	262,676	218,718	163,573	235,654
Ibaragi... ...	60,332	111,012	112,050	72,527	90,037	97,168
Tochigi ...	41,898	46,969	138,538	140,308	62,507	117,170
Nara	52,698	57,817	80,010	44,562	87,767	29,635
Miye	103,263	185,717	99,577	150,835	124,007	98,169
Shizuoka ...	842,089	870,941	962,684	245,043	1,001,665	618,719
Yamanashi ...	51,228	125,094	107,634	127,867	125,449	113,907
Gifu	1,261,889	1,871,709	997,969	1,081,627	1,103,455	1,179,045
Nagano ...	396,422	475,975	519,321	272,270	340,463	209,487
Miyagi	87,099	182,762	113,681	105,950	114,932	130,072
Fukushima ...	104,947	82,937	167,957	141,348	147,883	146,190
Iwate	60,227	121,390	130,001	100,850	60,134	48,811
Yamagata ...	32,925	43,269	52,084	55,372	52,950	49,152
Fukui	167,230	156,632	226,239	288,657	299,467	523,820
Ishikawa ...	40,533	45,492	160,692	64,479	89,619	77,223
Toyama ...	213,402	137,979	129,391	130,161	117,242	147,756
Tottori... ...	104,502	116,527	156,702	186,967	180,700	278,348
Shimane ...	242,176	313,134	329,694	305,094	343,850	282,018
Okayama ...	167,836	269,078	214,323	356,251	477,384	254,707
Hiroshima ...	177,669	200,866	182,445	179,062	252,286	214,650
Yamaguchi ...	460,639	549,104	504,286	579,332	678,631	580,332
Wakayama ...	65,055	57,077	90,998	106,394	165,793	148,650
Tokushima ...	163,528	248,919	419,990	155,145	184,500	160,790
Kagawa ...	242,776	253,795	164,045	51,964	266,034	131,815
Ehime	1,298,224	993,578	837,154	1,161,555	1,329,924	1,073,215
Kōchi	1,505,322	2,094,454	2,631,601	2,213,320	2,922,119	2,299,890
Fukuoka ...	492,735	437,732	500,101	662,742	678,796	482,969
Ōita	152,418	176,999	167,267	189,495	170,518	144,597
Saga	157,217	215,950	212,381	261,102	230,651	312,766
Kumamoto ...	219,600	221,250	272,216	319,978	291,849	352,695
Miyasaki ...	177,344	187,676	227,030	196,140	134,484	143,728
Kagoshima ...	88,921	120,919	62,898	91,703	120,847	228,601

Foreign markets :—China, France, Germany, Great Britain, United States of America, Australia, Hongkong, British America, British India, Dutch India.

PAPER WARE (unit of *yen*).

Kyōto	—	—	—	26,560	25,870	unknown
Gifu	73,900	361,500	154,196	419,674	493,360	„
Kumamoto ...	—	—	—	—	4,540	4,087

Foreign markets :—Australia, British America, British India, China, Korea, Egypt, France, Germany, Great Britain, Hongkong, Mexico, Russia, United States of America.

BAMBOO WARE (unit of *yen*).

Principal Places of Produce.	1896.	1897.	1898.	1899.	1900.	1901.
Hyōgo	—	150,000	160,000	—	484,739	unknown
Shizuoka ...	14,083	33,470	34,140	36,190	38,000	38,950
Shiga	—	—	—	7,750	7,900	63,600
Iwate	12,966	16,037	10,188	—	—	—
Fukui	—	—	—	10,511	19,480	unknown
Ishikawa ...	10,807	13,261	15,913	—	11,129	11,839
Kagawa ...	—	55,705	4,701	8,728	8,723	12,755
Ehime	7,575	—	—	—	12,000	unknown
Ōita	—	—	—	41,097	9,028	17,379
Kumamoto ...	13,194	14,225	9,591	—	—	unknown

Foreign markets :—Australia, British America, British India, China, Korea, Fgypt France, Germany, Great Britain, Hawaii, Holland, Hongkong, Philippine Islands, Russian Asia, United States of America.

BRUSHES (unit of *yen*).

Ōsaka	—	689,424	828,348	229,348	703,514	347,758

Foreign markets :—Australia, British America, British India, China, Great Britain, Hongkong, United States of America, Philippine Islands, Russian Asia.

GLASS WARE (lamp excepted; unit of *yen*).

Tokyo	715,825	256,326	344,478	469,460	621,295	unknown
Ōsaka	548,104	801,631	864,416	867,501	960,923	928,774
Kanagawa ...	62,972	19,594	56,202	126,450	135,900	142,535
Nagasaki ...	6,119	—	—	8,811	8,622	7,760
Aichi	—	40,760	76,775	90,000	100,000	unknown
Toyama ...	—	—	—	6,570	6,570	62,460
Shimane ...	—	—	—	3,802	2,700	2,565
Yamaguchi ...	—	—	—	6,943	7,680	7,980
Fukuoka ...	—	—	—	6,900	2,910	8,359
Saga	—	—	—	15,375	10,984	18,377
Kagoshima ...	—	—	—	1,650	3,182	2,976

Foreign markets :—British India, China, Korea, Great Britain, Hongkong, Philippine Islands, Russian Asia, United States of America.

SCREENS (unit of *yen*).

Kyōto	—	—	74,750	90,775	95,017	115,600
Hyōgo	252,330	266,500	253,742	—	215,000	unknown

Foreign markets :—Australia, Belgium, British America, British India, China, Dutch India, France, Germany, Great Britain, Hawaii, Holland, Hongkong, Italy, Philippine Islands, Russia, Russian Asia, United States of America.

"SHIPPŌKI" (cloisonne). (unit of *yen*).

Kyōto	47,854	44,738	43,568	58,823	72,347	68,934
Aichi	223,066	175,104	107,987	206,828	448,230	487,980

Foreign markets:—Australia, Belgium, British America, British India, China, Egypt, France, Germany, Great Britain, Hongkong, Russia, Russian Asia, United States of America.

BRONZE AND COPPER WARE (unit of *yen*).

Kyōto	294,164	510,143	556,974	476,000	400,700	725,986
Ōsaka	54,289	67,018	66,569	224,039	—	unknown
Aichi	48,866	48,095	50,862	58,205	56,676	72,661
Ishikawa ...	50,250	30,000	19,700	17,600	165,660	183,872
Toyama ...	224,480	231,730	278,076	319,544	302,250	429,002

Foreign markets:—British India, China, Egypt, France, Germany, Great Britain, Hongkong, Russia, Russian Asia, United States of America.

Of the other goods ranking next in importance to those given above may be mentioned towels, lamps, buttons, cotton under-shirts, cotton knit-work, shoes and boots, stockings, imitation foreign paper, cotton blankets, towel cloth, clocks, furniture, jinrikisha, leather-goods, lanterns, toilet-soap, ivory-goods, etc.

CHAPTER VIII.—Protection of Industrial Property. (Patents, Designs and Trademarks)

Introductory—History relating to Protection of Patents, Designs, and Trade-Marks—Protection of Foreign Patents, Designs, and Trade-Marks—Resume of Existing Regulations—Provisions that Specially Concern Foreigners—Statistics of Japanese and Foreign Patents, Designs and Trade-Marks.

I. INTRODUCTORY.

General Remarks.—The legislative measures relating to the protection of the right of industrial property comprise in regard to patent-right, designs, and trade-marks the Law of Patent-Right (amended in the existing form in March 1899) the Law of Designs (as before), and the Law of Trade-marks (as before), intended to guarantee the security of the right of both Japanese and foreign inventors and also to ensure honest dealings in business. Similarly illegitimate competition in the matter of house-marks are guarded by the provisions of the Commercial Code issued in 1900. Measures for providing against illegitimate practices other than those connected with house-marks are incomplete, the only provision existing in this dircetion being confined to prohibition by the Customs Tariff Law (March 1897) of the import of substances spuriously imitating articles covered by patent-right or registered designs or trade-marks. There is no provision for prohibiting the false representation of the place of production. However, the legislative measures for protecting the right of industrial property have lately been carried to a satisfactory state, especially in regard to patents, designs and trade-marks, as will be briefly described below.

II. HISTORY RELATING TO PROTECTION OF PATENTS, DESIGNS AND TRADE-MARKS.

GENERAL REMARKS.—Although the legislation relating to patents, designs and trade-marks was only enacted quite recently, comparatively speaking, this does not of course mean that the Japanese were destitute of inventions or designs, for facts may be abundantly enunciated to prove the contrary. For instance, the arts of keramics, lacquer-ware, weaving, etc. that were originally imported from Chian have been carried to a special state of perfection by the genius of our people, who also have displayed original taste of their own in the matter of designs and have won in this respect special attention for our goods in foreign markets.

Industrial Protection in Olden Days.

However, the idea of protecting inventors and thus encouraging the development of manufacture was not adopted in Japan till the advent of the Government of this era. It is true that from about the time of the Ashikaga Regency a certain sort of monopoly was accorded to manufacturers and technical experts, but this protection was extended with the object of increasing the revenue of the feudal princes that exercised this privilege rather than from any idea of encouraging invention and designs. In a similar way the protection of trade-marks dated from the Restoration and it was enforced because with the development of Japanese trade and that of foreign trade a necessity to adopt suitable measures for protecting trade-marks had become imperative.

The first legislative measure for protecting inventions was promulgated in April 1871 but was rescinded a year after, and for about fourteen years from that time Japanese inventors were left unprotected. We do not mean to say that an invention of meritorious character was not recognized by the Government, for by instituting in December 1882 the Regulations Recognizing Meritiorious Acts inventors of distinguished merit were rewarded with the Blue-ribbon medals established in the regulations. In June 1884 the regulations for protecting trade-marks were enacted, and then in the following year the regulations

New Legislative Measures.

relating to the propection of patents. In consequence of the restoration of the regulations, 326 cases of invention that had been reported to the local offices subsequent to 1872 were brought under the protection of the regulations. But it was not till December of 1889 that the regulations relating to designs were first elaborated, and at the same time the two cognate legislative measures already existing were amended. A similar amendment was extended ten years later to all the three, and they exist to-day in the present form.

III. PROTECTION OF FOREIGN PATENTS, DESIGNS AND TRADE-MARKS.

THE LAWS AS EXTENDED TO FOREIGNERS.—With the putting in operation of the revised treaties in 1899 the three laws of patent, designs and trade-marks which, like all other laws of the land, had been limited in operation to the Japanese people alone, became operative to foreigners residing in this country.

The dates of the conclusion of revised treaties with different treaty countries are as follows:—

Great Britain and Ireland	July 16, 1894.
United States of America	Nov. 22, 1894.
Italy	Dec. 1, 1894.
Peru	Mar. 2, 1895.
Russia	June 8, 1895.
Denmark	Oct. 19, 1895.
Germany	Apr. 4, 1896.
Sweden-Norway	May 2, 1896.
Belgium	June 2, 1896.
France	Aug. 4, 1896.
Netherland	Sept. 8, 1896.
Switzerland	Nov. 10, 1896.
Spain	Jan. 2, 1897.
Portugal	Jan. 26, 1897.
Austria-Hungary	Dec. 5, 1897.

The revised treaties cover the protection of foreign patents, designs and trade-marks, but according to the agreement between Japan and Germany it was arranged to put in force this protection

of patents, designs and trade-marks from the day of the exchange of ratification of the treaties, that is on November 18th of 1896 and this agreement ensured for the first time in the history of Japan the protection of the right of foreigners in regard to patents, designs and trade-marks. However, with the rest of the treaty Powers the date of the exchange of this mutual protection was as follows:—

Great Britain and Ireland	Jan. 4, 1901.
United States of America	Mar. 8, 1901.
Switzerland	July 9, 1901.
Portugal	Aug. 30, 1901.
Italy	Oct. 12, 1901.
Denmark	Jan. 10, 1898.
Netherland	Feb. 1, 1898.
Sweden-Norway	Feb. 15, 1898.
Belgium	Mar. 11, 1898.
Spain	Sep. 1, 1898.
Austria-Hungary	Nov. 30, 1898.

It is needless to say that a similar protection was extended with the coming in operation of the revised treaties to all the rest of the treaty Powers whose treaties that had been concluded with Japan contained provisions relating to the exchange of this protection.

Japan as Member of the International League for the Protection of Industrial Property.—The protocol appended to the treaty concluded between Japan and England in July 1894 and the treaties subsequently concluded with the rest of the countries specified the entrance of Japan into the International League for the Protection of Industrial Property, and in pursuance of that agreement Japan joined the League on July 15th, 1899, and thus all necessary arrangements required for protecting foreigners in the matter of industrial property were completed.

IV. RESUME OF THE EXISTING SYSTEM.

General Remarks.—According to the existing system all matters relating to patents, designs and trade-marks are controlled by the Patent Bureau of the Department of Agriculture and

Commerce, which adopts a regular system of examination in granting a license in answer to application for patents or in registering a design or trade-mark sent in for registration. An applicant is entitled to appeal for re-examination or for the judgment of the Comptrollers in case the application has been rejected. All cases relating to the invalidity of patents or registrations or to the confirmation of the respective rights are attended to by the Bureau, but when any decision of the Bureau is regarded as being at variance with the law, an applicant may appeal to the Court of Cassation whose decision is final. Then a provisional protection is extended to exhibits placed on view in exhibitions or similar undertakings. Patent agents are subject to the control of the Patent Bureau. The agents duly registered on the list of the Bureau number 193 (according to the returns made in June of 1902.)

PRINCIPAL CLAUSES IN THE LAW OF PATENTS.—The Law extends protection according to priority (Art. 1), while the following inventions are not patentable:—(a) articles of diet and relishes, (b) drugs and process of compounding them, (c) matters prejudicial to public order or morals, (d) matters publicly known prior to the filling of claims (excepting those cases in which, owing to the necessity of trial examinations, the matter embodied in the claim came to public knowledge not more than two years prior to the filing of the application). Then for an additional invention based on the original one, an additional letter-patent may be obtained (Art. 2), a smaller fee being paid both for application and for license. Patents are valid (Art. 19) for 15 years from the date of registration in the official record, and (Art. 3) every year after the issue of the letter-patent the fee is to be paid in advance according to a fixed rate, while for an additional invention based on the original one, the payment of 20 *yen* at one time covers the whole period of the validity of the patent. Further (Arts. 39 & 40) (*a*) when a patentee who while himself failing to exploit in Japan and without justifiable cause his own invention within three years from the issue of the license or while suspending to make such exploitation for three years, refuses to transfer his right under reasonable condition to a third party applying to him for the said transfer or for permission to use the right; (*b*) when a patentee fails to pay in the

fee for more than 60 days from the date on which he should have forwarded it; (*c*) when a patentee not residing in Japan fails to appoint for more than six months and without justifiable reason a proper attorney; in all such cases the Chief of the Bureau is entitled to revoke the patent.

PRINCIPAL CLAUSES IN THE LAW OF DESIGNS.—The designs as protected by the existing Law are those of artistic type used in the form of shape, coloration or figure as applied to industrial property (Art. 1); but designs of the following description are excluded from protection, (*a*) shape or figure resembling the Imperial coat of arms, the chrysanthemum, (*b*) figures that are prejudicial to public order or morals, (*c*) those that have been publicly known prior to the filing of the application or figures &c. resembling those already publicly known (Art. 2). The protection is of course determined according to priority (Arts. 2 & 8). The validity of the right of exclusive use of a design is limited to objects of specified classification as represented by the applicant (Art. 4), and this validity holds good for 10 years from the time of the registration in the official records (Art. 3). A similar process as in the case of patents is in force in paying the fee on the occasion of filing application and of paying the fee every year the after registration; but for a design resembling one previously registered by the applicant, the rate is lower. In a similar way the registered design may lose its validity when the payment of the fee is neglected for more than 60 days or when the grantee of registration not residing in Japan fails to appoint within six months a qualified attorney residing in this country.

PRINCIPAL CLAUSES IN THE LAW OF TRADE-MARKS.—The Law protects all those trade-marks except those (*a*) that are identical to or resemble in form the Imperial coat of arms, the chrysanthemum; (*b*) that are identical to or resemble in form the national flags, military or naval flags, or decorations of this country, or national flags of foreign countries; (*c*) that are prejudicial to public order or morals or are likely to impose upon the public; (*d*) that are identical to or resemble other registered trade-marks or, when they are to be used for articles of the same nature, to those for which one full year has not elapsed after they have lost

validity; (*e*) that are identical to or resemble trade-marks which are used by other people prior to the enforcement of the existing Law; (*f*) that simply represent the ordinary mode of designating goods or places of produce, or the characters, devises or marks customarily used in trade to denote a special grade or quality or shape of the goods, or that merely represent the ordinary style of writing names, house-names, or names of companies or firms (Arts. 1 & 2). However, a mark of an interest organized under approval of the authorities may be used as a trade-mark and protected accordingly (Art. 21). As in the two preceding cases priority secures protection over all others coming subsequently (Arts. 2 & 8), but the validity of an exclusive trade-mark is limited to the special class of objects originally indicated by the applicant (Art. 5). The term of validity of the exclusive use of a trade-mark is 20 years, and is open to renewal (Arts. 3 & 5). The fee is payable with the registration of a trade-mark applied for (Art. 13 of the Law and Arts. 7 & 13 of the Regulation for putting it in Operation). Finally a registered trade-mark is liable to lose its validity in case (*a*) the place of produce, the quality, etc. of the goods for which it is used are falsely represented subsequent to its registration, (*b*) or when in case the applicant who does not reside in Japan, does not appoint within six months from the date of the registration a qualified attorney residing in this country (Art. 11).

V. PROVISIONS THAT SPECIALLY CONCERN FOREIGNERS.

Non-Resident Foreign Applicants.—To enumerate those provisions in the existing laws, that specially relate to foreigners, when a foreigner not residing in Japan wishes to secure a latter-patent or to have his design or trade-mark registered, he must file in an application through his attorney appointed from among those in this country. He must further appoint, when his application has been accepted by the Patent Bureau, an attorney to represent him in all dealings with the Bureau and in all possible civil or criminal actions thereof. The neglect to appoint such an attorney without justifiable reason within six months will invalidate, as mentioned above, the

efficacy of his patents or registration (The Law of Patent, Arts. 6 and 38: Law of Designs Arts., 12 and 22; Law of Trade-Marks, Arts. 20 and 9.)

Form of Documents.—Any document intended to be filed in the Bureau must be written in Japanese, and when it is drawn up in any other language Japanese translation must accompany the original. Further, a foreigner who is not residing in Japan must submit a document properly certifying his nationality, domicile and place of business (Arts. 3, 4 and 9 of the Regulations for putting the Law of Patent in Operation: Art. 8 of the Regulations for putting the Law of Designs in Operation; Art. 17 of the Regulations for putting the Law of Trade-marks in Operation.)

Specifications and Drawings.—When an application is filed in within the prescribed period of priority as provided in Art. 4 of the International League for the Protection of Industrial Property, application, specifications and drawings certified by the Government of the country of the original application must be submitted (Art. 25 of the Regulations for putting the Law of Patent in Operation; Art. 8 of the Regulations for putting the Law of Designs in Operation; Art. 17 of the Regulations for putting the Law of Trade-marks in Operation).

Provisional Protection.—During the period of provisional protection extended to an invention or design or trade-mark exhibite in an international exhibition, a similar protection shall be accorded to it in this country during the period of the exhibition, provided the certificate establishing the fact of the provisional protection in the country where the exhibition is held is submitted on the occasion of sending in an application, (Art. 25. of the Law of Patent and Art. 26 of the Regulation, thereof; Art. 22 of the Law of Designs and Art. 8 of the Regulations thereof; Art. 20 of Trade-marks and Art. 7 of the Regulations thereof.)

Term of Registered Trade-Marks.—A foreign registered trade-mark duly registered in Japan shall be valid during the same period of validity, in the original country, but within the maximum limit of 20 years (Art. 3 of the Law of Trade-marks.)

Exploitation of Patents.—The exploitation of the patented invention must be made in Japan, but, in case a patentee, while

neglecting to do so for more than three years, refuses without justifiable reason to assign or to permit the use of the patent under reasonable conditions by a third party who has applied to him for such assignment or permission, the patent is liable to be revoked. (Art 38 of the Law of Patents.)

VI. STATISTIC OF JAPANESE AND FOREIGN PATENTS, DESIGNS AND TRADE-MARKS.

THE applications for patents filed by Japanese and foreigners and the number of letters-patent granted in Japan during the period indicated are given in the following table:—

Year.	No. of Application.	No. of License Granted.
1885	425	99
1886	1,384	205
1887	906	109
1888	778	183
1889	1,064	209
1890	1,180	240
1891	1,288	367
1892	1,344	379
1893	1,337	318
1894	1,250	326
1895	1,112	223
1896	1,213	169
1897	1,542	188
1898	1,789	293
1899	1,915	597
1900	1,980	586
1901	2,372	606
1902	3,050	871
1903	3,253	1,024
Total	29,195	6,992

DESIGNS.

Year.	No. of Application.	No. of Registration.
1889	176	23
1890	497	82
1891	290	117
1892	262	48
1893	250	59
1894	336	64
1895	318	94
1896	300	96
1897	320	90
1898	265	52
1899	342	139
1900	397	130
1901	514	141
1902	930	252
1903	1,181	366
Total	6,377	1,573

TRADE-MARKS.

Year.	No. of Application.	No. of Registration.
1884	883	—
1885	1,296	949
1886	624	508
1887	757	361
1888	568	436
1889	1,029	664
1890	819	583
1891	896	554
1892	1,146	588
1893	1,243	648
1894	1,350	877
1895	1,373	923
1896	1,578	858
1897	3,228	2,335
1898	2,232	1,597
1899	2,837	1,942
1900	2,776	1,767
1901	2,608	1,621
1902	3,529	2,016
1903	3,743	1,924
Total	34,419	21,151

Note :—In the figures for the years subsequent to 1899 as many as 628 cases of continuation are included in applications and 599 in registrations.

The following figures show the number of applications, licenses and registrations relating to foreigners from November 1896 to December 1903, the countries being mentioned in alphabetical order :—

	Patent.		Design.		Trade-mark.	
	No. of Application.	No. of Licenses.	No. of Application.	No. of Registration.	No. of Application.	No. of Registration.
Austria-Hungary	23	10	—	—	14	14
Belgium	3	2	—	—	8	4
China	—	—	—	—	20	10
Denmark...	20	8	—	—	3	3
France	78	43	4	1	245	200
Germany...	228	100	7	1	1,274	950
Great Britain	339	189	12	9	1,598	1,183
Netherland	10	3	—	—	7	5
Italy...	12	5	—	—	4	3
Korea	5	2	—	—	—	—
Portugal	1	1	—	—	1	1
Russia	8	3	—	—	—	—
Spain	4	—	—	—	11	8
Sweden-Norway	18	11	—	—	4	3
Switzerland	11	8	—	—	53	32
United States of America.	831	486	1	1	450	338
Total	1,591	871	24	12	3,696	2,756

Note :—The figures for Great Britain cover those for its colonies.

PART IV.

FOREIGN TRADE.

CHAPTER I.

TARIFF SYSTEM.

The Original Tariff System.—The tariff system of Japan was originally based on the treaties concluded with the foreign countries. The treaties concluded with Great Britain, United States of America, France, Russia and Netherlands in the 5th year of Ansei (1858) regulated, by means of the commercial agreement appended to the treaties, all matters relating to the entrance and departure of ships, the import and export of commodities, as well as import and export duties. In June of 1859 the three ports of Yokohama, Nagasaki, and Hakodate were opened to commerce, and customs house was established. Subsequently Kobe, Ōsaka and Niigata were similarly opened, the first in December of 1867, the second in July of 1868, and the last in November of the same year. In May of 1866, as the result of an agreement with the Ministers of Great Britain, France, United States of America and Netherlands the rate of import and export duties was fixed on the basis of 5 per cent. *ad valorem*.

First Revision.—The idea of drawing up a regular tariff system was mooted frequently and at last coming to 1894, it took definite shape as the Tariff System which was promulgated in 1897. The system divided imports into three main classes, dutiable goods, non-dutiable goods, and prohibited goods. The tariff for dutiable goods ranged from 5 to 40 per cent. *ad valorem*, and divided into 16 grades. The schedule has as standard rate, so to say, 20 per cent. for ordinary refined goods, this rate to decrease in one direc-

tion but to rise in another. (1) Natural produce, (2) scientific instruments and apparatus and raw materials, (3) machinery, (4) half-manufactured materials, (5) articles of ordinary consumption occupy the decreasing side of the schedule, while articles of luxury and liquors and tobacco occupy the other extreme. The tariff in question was put in force in January of 1899.

Subsequent Amendments.—Subsequently the tariff received more or less amendment either in the interests of the inland revenue or with the object of encouraging home industries. Thus in the same year the tariff for manufactured tobacco was raised to 100 per cent. *ad valorem*, alchol to 250 per cent., Chinese liquor, *sakê*, and other distilled liquors not mentioned in the list, to 80 to 100 per cent. In the same year raw materials required by the State monopolies and match-making were relieved from all duties as were also artificial and natural fertilizers. In 1901 the rate on tobacco was advanced to 150 per cent. and that on alcohol to 42 *sen* per litre, and at the same time rate on some other imports was also advanced more or less. Further in 1902, in compliance with a resolution of the House of Representatives, a law for putting a duty of 15 to 25 per cent. on raw eggs was promulgated.

Tariff Law.—With the putting in force of a regular tariff schedule it was necessary for Japan's tariff autonomy to have a regular tariff law, for no such law had existed in regular shape; there was only a semblance of it in the shape of commercial agreements appended to the old treaties. With the object of filling this serious gap in the tariff legislature of the country, the draft of a tariff law was drawn up after consulating foreign laws on this subject. It was placed before the 13th session of the Imperial Diet, was passed by it in its original form, and at last it became law in 1899.

The establishment of a regular tariff law may be said to have ushered in a new era in the history of our tariff system. By that establishment many matters that formerly led to diplomatic interference have been transferred to the domain of ordinary administrative affairs. For instance, special arrangement has been provided for making protest against the ruling of Customs Chiefs, while it was made possible to determine by Imperial Ordinances places to be

newly opened for commerce or the kinds of commodities to be either exported from or imported into places. Provisions relating to the passage of goods through the interior or through the Customs Houses have already been created in virtue of the law in question. The establishment of bonded warehouses may also be mentioned in this connection.

The temporary storage of imports in Customs sheds provided for by Law No. 82 issue in 1900; the exemption of duty according to Law No. 85 issue in the same year, from goods re-exported in manufactured form within one full year from the time of original import, and the establishment of goods agents in 1901 may also be cited as some of the measures provided for facilitating foreign trade. The enactment in 1902 of rebate arrangement on imported raw sugar in compliance with the proposal of the House of Representatives may also be mentioned here.

CHAPTER II.

DEVELOPMENT OF FOREIGN TRADE.

Foreign Trade in Pre-Restoration Days.—The foreign trade of Japan, and indeed even home trade, remained in an insignificant state prior to the discontinuation of the isolation policy, for whatever trade existed in those days was carried on only with China, Korea, Netherlands and Portugal, and even this was limited in scope. Then the setting up of autonomic local governments by the feudal barons and the defective means of communication and transportation necessarily obstructed the free development of trade. It was only after the conclusion of the treaties first with the United States of America, then with Russia, Great Britain, France, Netherlands, etc., as already mentioned, and after the establishment of regular trading ports at Nagasaki, Yokohama, Hakodate, and elsewhere and especially after the abolition of the feudal system in 1868 and the rehabilitation of the Imperial régime, that a new era began with our foreign trade. The introduction of various factors of Western civilization has powerfully accelerated its development.

Recent Progress of Foreign Trade.—Below is given a table showing the progress of foreign trade during the last 35 years.

TOTAL VALUE OF EXPORT AND IMPORT OF PRINCIPAL COMMODITIES.

(figures marked with an asterisk denote excess of imports).

Year.	Exports.	Imports.	Total.	Excess of Exports and Imports.
	yen.	*yen.*	*yen.*	*yen.*
1868	15,553,437	10,693,072	26,246,545	4,860,401
1869	12,908,978	20,783,633	33,692,611	* 7,874,655
1870	14,543,013	33,741,637	48,284,650	* 19,198,624
1871	17,968,609	21,916,728	39,885,336	* 3,948,119
1872	17,026,647	26,174,815	43,201,462	* 9,148,168
1873	21,635,441	28,107,390	49,742,831	* 6,471,949

(figures marked with an asterisk denote excess of imports).

Year.	Exports.	Imports.	Total.	Excess of Exports and Imports.
	yen.	*yen.*	*yen.*	*yen.*
1874	19,317,306	23,461,814	42,779,120	* 4,144,508
1875	18,611,111	29,975,628	48,586,738	* 11,364,517
1876	27,711,528	23,964,679	51,676,206	3,746,849
1877	23,348,522	27,420,903	50,769,425	* 4,072,381
1878	26,988,140	32,874,834	58,862,974	* 6,886,694
1879	28,175,770	32,953,002	61,128,773	* 4,777,232
1880	28,395,387	36,626,601	65,021,988	* 8,231,214
1881	31,058,888	31,191,246	62,250,134	* 132,358
1882	37,721,751	29,446,504	67,168,345	8,275,157
1883	36,268,020	28,444,342	64,712,861	7,823,178
1884	33,871,466	29,672,647	63,544,113	4,198,819
1885	37,146,691	29,356,968	66,503,659	7,789,723
1886	48,876,313	32,168,432	81,044,745	16,707,881
1887	52,407,681	44,304,252	96,711,933	8,103,429
1888	65,705,510	65,455,234	131,160,744	250,276
1889	70,060,706	66,103,767	136,164,472	3,956,939
1890	56,603,509	81,728,581	138,332,087	25,125,075
1891	79,527,272	62,927,268	142,454,541	16,600,004
1892	91,102,754	71,326,080	162,428,833	19,776,674
1893	89,712,865	88,257,172	177,970,036	1,455,693
1894	113,246,086	117,481,955	230,728,042	* 4,235,869
1895	136,112,178	129,260,578	265,372,756	6,851,600
1896	117,842,761	171,674,474	289,517,235	* 53,831,713
1897	163,135,077	219,300,772	382,435,849	* 56,165,695
1898	165,753,753	277,502,157	443,255,909	*111,748,404
1899	214,929,894	220,401,926	435,331,820	* 5,472,032
1900	204,429,994	287,261,846	491,691,840	* 82,831,852
1901	252,349,543	255,816,645	508,166,188	* 3,467,102
1902	258,303,065	271,731,259	530,034,324	* 13,428,194

RATE OF PROGRESS.—The foregoing table shows that compared with the corresponding figures in 1868 the total value of exports and imports in 1902 advanced by twenty fold; by twelve fold compared with those of 1872; by eight fold compared with those of 1882, and over threefold with those of 1892.

IMPORT AND EXPORT OF SPECIE.—The import and export of specie and bullion during the same period is shown below:—

TOTAL VALUE OF EXPORT AND IMPORT OF SPECIE AND BULLION.

(figures marked with an asterisk denote excess of exports).

Year.	Exports.	Imports.	Excess of Exports and Imports.
	yen.	*yen.*	*yen.*
1868	—	—	—
1869	—	—	—
1870	—	—	—
1871	—	—	—
1872	4,480,896	3,691,510	* 789,389
1873	5,122,927	3,080,542	* 2,042,386
1874	13,995,202	1,071,731	*12,923,471
1875	14,663,971	298,322	*14,365,649
1876	10,675,701	8,267,241	* 2,408,460
1877	9,441,271	2,173,499	* 7,267,772
1878	8,328,653	2,189,101	* 6,139,552
1879	12,778,864	3,134,804	* 9,644,060
1880	13,222,993	3,638,230	* 9,584,763
1881	7,490,547	1,856,147	* 5,634,400
1882	4,430,198	6,160,724	1,730,526
1883	3,156,565	5,451,501	2,294,936
1884	5,005,072	5,611,759	606,687
1885	4,256,446	7,546,841	3,290,395
1886	9,626,448	9,171,874	* 454,574
1887	11,035,488	8,871,266	* 2,164,222
1888	7,833,444	8,732,492	899,048
1889	5,188,529	14,173,246	8,984,717
1890	13,778,531	1,200,607	*12,577,924
1891	1,452,964	13,888,526	12,435,562
1892	9,729,753	22,883,757	13,154,004
1893	12,289,188	11,186,487	* 1,102,701
1894	34,379,111	26,783,653	* 7,595,458
1895	27,301,699	5,874,164	*21,427,535
1896	11,598,884	39,142,208	27,543,324
1897	19,219,163	81,466,713	62,247,550
1898	86,987,481	42,563,781	*44,423,700
1899	11,178,247	20,163,501	8,985,254
1900	56,707,063	11,517,835	*45,189,228
1901	14,049,099	10,960,750	* 3,088,349
1902	2,028,982	32,161,358	30,132,376

CHAPTER III.

DISTRIBUTION OF TRADE.

TRADE WITH ASIA, EUROPE AND AMERICA.—The commercial importance of the Asiatic Continent to our foreign trade is a fact that need not be insisted on, and the fact that the progress of our trade with the continent is striking redounds much to the credit of our countrymen. In 1882 Europe stood at the head of the list in the volume and value of its exports, followed by America and Asia. In imports Europe headed the list followed by Asia and America. Coming to 1902 the relative positions of these great divisions of the globe were reversed, and in the exports Asia came first followed by America and Europe. In imports also Asia occupied the same position, after which came Europe and America.

RELATIVE PROGRESS OF TRADE WITH ASIA, EUROPE AND AMERICA. — To review the relative progress of the share of the three continents in our trade, between 1882 and 1902 Asia advanced by over sixteen fold in the value of our exports, Europe by 400 per cent., America about 600 per cent., Australia and others by over 335 per cent. In imports the rate of advance between 1882 and 1902 was over 13 and a half fold for Asia, over 550 per cent. for Europe, over 1560 per cent. for America, and over 555 per cent for Australia and others. Details are given in the following tables :—

TOTAL VALUE OF EXPORTS TO VARIOUS COUNTRIES.

TABLE I.

(unit of *yen*).

Year.	China.	Korea.	Dutch India.	British India.	French India.	Hong-kong.
1868... ...	—	—	—	—	—	—
1869... ...	—	—	—	—	—	—
1870	—	—	—	—	—	—
1871... ...	—	—	—	—	—	—
1872... ...	—	—	—	—	—	—
1873... ...	9,881,533	—	—	—	—	—
1874... ...	8,665,716	—	—	—	—	—
1875... ...	8,200,382	—	—	—	—	—
1876... ...	7,472,055	—	—	—	—	—
1877... ...	5,674,540	—	—	190,528	—	—
1878... ...	4,784,194	—	—	819,931	—	—
1879... ...	5,865,350	—	—	1,591,039	—	—
1880... ...	5,846,227	—	—	1,750,977	—	—
1881... ...	5,503,444	—	—	2,212,964	—	—
1882... ...	6,553,201	—	—	2,306,223	—	—
1883... ...	5,768,226	—	—	2,455,619	—	—
1884... ...	7,019,996	408,398	—	2,350,909	—	—
1885... ...	6,342,198	470,609	—	3,398,698	—	—
1886... ...	7,123,851	563,448	—	3,561,319	—	—
1887... ...	7,985,821	1,010,374	—	5,291,614	—	—
1888... ...	10,360,135	1,041,764	—	7,689,092	—	—
1889... ...	9,199,696	1,273,332	—	7,333,859	—	4,103,703
1890... ...	8,849,685	4,363,540	—	8,910,892	—	5,495,912
1891... ...	8,798,428	4,032,922	—	5,614,079	—	5,089,606
1892... ...	12,509,410	3,046,340	—	7,662,004	—	6,985,723
1893... ...	17,095,975	1,999,439	—	8,679,029	—	8,268,071
1894... ...	17,511,507	2,183,313	—	10,560,448	6,204,147	8,999,718
1895... ...	22,985,144	2,925,400	—	12,001,811	3,382,673	8,078,190
1896... ...	21,344,521	5,118,925	—	22,517,425	1,673,389	9,133,778
1897... ...	29,265,845	8,864,360	—	29,775,930	9,525,553	12,027,197
1898... ...	30,523,861	4,796,032	1,659,606	40,764,245	26,668,444	15,904,467
1899... ...	28,687,731	4,976,167	1,305,572	43,883,886	4,489,326	7,338,455
1900	29,960,740	8,805,618	4,698,642	23,516,351	3,632,643	10,659,855
1901... ...	27,256,986	10,052,438	5,075,787	42,779,905	4,082,897	11,141,788
1902... ...	40,590,858	7,957,946	3,568,719	50,977,168	5,649,946	2,454,881

Year.	Philippines.	Russian Asia.	Siam.	Total.
1868	—	—	—	—
1869	—	—	—	—
1870	—	—	—	—
1871	—	—	—	—
1872	—	—	—	—
1873	—	—	—	9,881,533
1874	—	—	—	8,665,716
1875	—	—	—	8,200,382
1876	—	—	—	7,472,055
1877	—	—	—	5,865,068
1878	—	9,288	—	5,613,412
1879	—	10,280	—	7,466,669
1880	—	8,593	—	7,605,797
1881	—	74,844	—	7,791,251
1882	—	18,321	—	8,877,745
1883	—	22,605	—	8,246,450
1884	—	12,488	—	9,791,791
1885	—	13,451	—	10,224,956
1886	—	13,146	—	11,261,765
1887	130,995	19,146	—	14,427,951
1888	213,169	332,525	35,696	19,672,380
1889	227,486	825,254	27,869	22,991,200
1890	255,486	769,948	225,809	28,871,272
1891	228,481	884,621	28,472	24,676,608
1892	475,123	835,395	4,382	31,518,376
1893	567,133	1,871,113	54,391	38,535,151
1894	1,698,819	1,165,306	618,859	48,942,117
1895	1,220,745	1,371,612	143,095	52,108,669
1896	1,804,914	1,318,893	203,275	63,115,119
1897	2,675,300	1,859,654	1,190,969	95,184,809
1898	3,294,183	1,694,170	4,173,610	129,478,617
1899	2,383,874	4,534,120	757,030	98,356,160
1900	2,284,294	5,716,705	585,480	89,860,327
1901	2,981,031	4,515,166	1,195,082	109,081,080
1902	1,493,865	5,963,858	1,695,779	120,353,021

TABLE II.

(unit of *yen*).

Year.	British America.	U. S. of America.	Others.	Total.
1868	—	—	—	—
1869	—	—	—	—
1870	—	—	—	—
1871	—	—	—	—
1872	—	—	—	—
1873	—	1,017,761	—	1,017,761
1874	—	1,047,250	—	1,047,250
1875	—	1,920,346	—	1,920,346
1876	—	1,124,882	—	1,124,882
1877	—	1,736,781	—	1,736,781
1878	—	2,727,585	—	2,727,585
1879	—	3,212,273	808	3,213,081
1880	—	2,669,334	—	2,669,334
1881	—	1,816,200	—	1,816,200
1882	—	3,133,666	20,768	3,154,433
1883	—	3,233,032	4,844	3,237,876
1884	—	2,489,970	2,158	2,492,128
1885	—	2,751,321	2,295	2,753,616
1886	—	3,358,987	5,536	3,364,523
1887	26,174	3,283,096	1,185	3,310,454
1888	25,109	5,648,734	2,036	5,675,879
1889	29,970	6,143,171	5,764	6,178,905
1890	25,659	6,874,531	11,138	6,911,329
1891	20,835	6,840,048	5,349	6,866,233
1892	30,754	5,988,054	6,032	6,024,840
1893	16,629	6,090,408	2,065	6,109,103
1894	45,395	10,982,558	433	11,028,387
1895	13,718	9,276,360	3,378	9,293,456
1896	51,525	16,373,420	5,312	16,430,257
1897	129,129	27,030,538	289	27,159,955
1898	156,989	40,001,098	6,651	40,164,738
1899	182,018	38,215,894	2,467	38,400,379
1900	316,669	62,761,196	12,808	63,090,674
1901	181,785	42,769,430	3,699	42,954,914
1902	517,274	48,652,825	1,879	49,171,978

Year.	Australia.	Egypt.	Hawaii.	Total.	Others.	Grand Total.
1868... ...	—	—	—	—	—	—
1869... ...	—	—	—	—	—	—
1870... ...	—	—	—	—	—	—
1871... ...	—	—	—	—	—	—
1872... ...	—	—	—	—	—	—
1873... ...	—	—	—	—	771,381	28,107,390
1874... ...	—	—	—	—	754,373	23,461,814
1875... ...	—	—	—	—	399,556	29,975,628
1876... ...	—	—	—	—	665,601	23,964,679
1877... ...	—	—	—	—	239,497	27,420,903
1878... ...	23,238	—	14	23,252	8,341	32,874,834
1879	78,442	—	998	79,440	35,220	32,953,002
1880... ...	38,080	—	50	38,130	48,573	36,626,601
1881... ...	74,327	—	—	71,327	51,723	31,191,246
1882... ...	74,302	—	—	74,302	82,079	29,446,594
1883... ...	91,160	—	—	91,160	65,045	28,444,842
1884... ...	26,429	—	—	26,429	46,554	29,672,647
1885	72,104	—	22	72,126	36,824	29,356,968
1886... ...	80,466	—	—	80,466	92,881	32,168,432
1887... ...	32,266	—	—	32,266	43,887	44,304,252
1888... ...	218,713	—	1,872	220,585	56,838	65,455,234
1889... ...	267,085	—	5,261	272,346	321,034	66,103,767
1890... ...	334,239	—	267	334,505	6,095,612	81,728,581
1891... ...	228,844	—	26,362	255,205	1,640,126	62,927,268
1892... ...	272,787	—	648	273,435	867,821	71,326,080
1893... ...	319,034	—	3,690	322,724	1,916,340	88,257,172
1894... ...	534,763	—	6,148	540,911	390,204	117,481,955
1895... ...	1,031,725	—	2,163	1,033,888	574,973	129,260,578
1896... ...	835,046	—	9,927	844,973	907,820	171,674,474
1897... ...	897,050	—	4,414	898,464	1,007,655	219,300,772
1898... ...	1,403,436	355,758	23,951	1,783,145	1,306,104	277,502,157
1899... ...	1,708,670	939,365	5,623	2,653,658	2,945,507	220,401,926
1900... ...	2,455,939	1,468,099	5,265	3,929,304	3,988,141	287,261,846
1901... ...	1,777,599	1,889,644	6,762	3,674,004	3,321,290	255,816,645
1902... ...	1,672,218	2,418,262	22,724	4,113,204	4,176,565	271,731,259

TABLE III.

(unit of *yen*).

Year.	Austria.	Belgium.	France.	Germany.	England.
1868	—	—	—	—	—
1869	—	—	—	—	—
1870	—	—	—	—	—
1871	—	—	—	—	—
1872	—	—	—	—	—
1873	—	—	2,489,270	2,040,263	11,907,182
1874	—	—	1,745,242	728,745	10,520,490
1875	—	—	3,922,591	813,506	14,689,728
1876	—	—	3,171,956	384,076	11,117,277
1877	—	63,474	3,031,037	700,981	15,679,111
1878	19,757	190,363	3,348,811	1,280,645	19,273,057
1879	12,351	159,789	3,499,277	1,174,182	16,868,965
1880	8,523	363,029	3,759,542	1,745,067	19,626,030
1881	5,098	389,588	3,195,655	861,921	16,402,382
1882	5,871	128,932	1,464,460	1,196,268	13,971,859
1883	6,533	268,913	1,871,042	1,421,612	12,775,124
1884	10,190	202,653	1,587,541	2,315,869	12,758,807
1885	5,091	317,683	1,333,880	1,671,960	12,456,611
1886	9,605	507,907	1,330,914	2,313,659	12,703,249
1887	27,074	322,196	2,313,346	4,010,916	18,970,544
1888	49,765	596,160	4,125,190	5,260,897	28,693,567
1889	19,572	887,137	3,334,168	4,887,900	26,067,935
1890	24,151	1,032,351	3,869,332	6,856,956	26,619,102
1891	27,611	688,958	2,834,025	5,127,476	19,996,051
1892	10,265	951,537	3,620,500	6,375,048	20,789,332
1893	24,209	935,001	3,305,278	7,318,134	27,929,628
1894	19,820	1,201,121	4,348,048	7,909,542	42,189,874
1895	25,121	2,066,245	5,180,135	12,233,159	45,172,111
1896	40,400	3,106,094	7,682,347	17,183,953	59,251,780
1897	85,943	3,173,218	5,147,592	18,143,280	65,406,266
1898	591,326	4,226,703	6,979,983	25,610,962	62,707,573
1899	1,250,217	5,415,810	5,768,180	17,613,191	44,836,994
1900	4,502,477	7,949,254	8,059,819	29,199,696	71,638,220
1901	4,738,198	5,810,897	3,752,828	28,320,102	50,575,789
1902	2,376,656	6,977,656	4,745,776	25,812,921	50,364,029

Year.	Holland.	Italy.	Russia.	Switzerland.	Others.	Total.
1868	—	—	—	—	—	—
1869	—	—	—	—	—	—
1870	—	—	—	—	—	—
1871	—	—	—	—	—	—
1872	—	—	—	—	—	—
1873	—	—	—	—	—	16,436,715
1874	—	—	—	—	—	12,994,476
1875	—	29,519	—	—	—	19,455,343
1876	—	28,832	—	—	—	14,702,142
1877	—	63,394	—	41,560	—	19,579,557
1878	164,040	118,133	—	66,790	40,649	24,502,243
1879	19,381	112,999	—	260,831	50,819	22,158,594
1880	18,094	159,010	—	530,134	54,938	26,264,767
1881	8,468	177,110	—	376,590	43,933	21,460,744
1882	12,415	112,290	—	322,001	43,940	17,258,035
1883	15,474	155,964	—	253,093	36,556	16,804,311
1884	17,805	91,177	—	294,772	36,937	17,315,750
1885	20,105	95,998	—	306,255	61,835	16,269,447
1886	44,749	119,558	—	263,446	75,711	17,368,799
1887	42,018	163,774	—	507,481	122,249	26,479,695
1888	128,290	200,133	—	659,607	25,941	39,829,551
1889	47,002	144,663	—	765,008	186,892	36,340,281
1890	23,210	128,744	—	858,610	103,406	39,515,862
1891	44,341	111,887	—	544,970	108,776	29,489,096
1892	17,600	67,680	—	713,650	95,993	32,641,607
1893	32,619	86,578	—	669,301	73,106	40,373,854
1894	30,174	170,340	8,468	629,208	73,744	56,580,337
1895	61,535	148,465	46,046	1,040,212	276,563	66,249,591
1896	62,799	182,924	97,956	2,534,217	233,835	90,376,306
1897	57,992	213,267	47,933	2,555,905	218,493	95,049,888
1898	242,869	385,819	116,291	3,498,310	319,917	104,469,552
1899	914,405	236,988	49,123	1,676,669	284,643	78,046,222
1900	809,620	450,106	309,227	3,012,505	426,477	126,393,400
1901	408,244	154,382	210,276	2,208,574	606,068	96,785,357
1902	772,666	186,813	103,114	1,951,047	625,814	93,916,491

CHAPTER IV.

PRINCIPAL EXPORTS.

The principal exports from Japan are raw silk, *habutaye*, cotton yarns, matches, fancy matting, tea, camphor, marine products, copper, coal, etc. Of these raw silk and *habutaye* stand out conspicuous in volume and value, and have in the United States of America and France their best customers. In 1892 the total value of their exports amounted to 40,300,000 *yen* approximately, to be advanced to about 101,540,000 *yen* in 1902. Cotton yarns go mostly to China, Hongkong and Korea, matches and coal to China, Hongkong and British India; fancy matting to the United States of America, etc: marine products to China and Hongkong; copper to Hongkong, England, Germany, etc. Details from 1868 are given below.

TOTAL VALUE OF CHIEF COMMODITIES EXPORTED.

(unit of *yen*).

Year.	Tea.	Rice.	Dried Cuttle-fish.	*Kanten* (Colle- Vegetable.)	Sea-weeds.	Camphor.
1868	3,581,769	?	125,854	62,679	163,449	77,098
1869	2,102,420	?	173,586	66,263	454,638	115,339
1870	4 511,616	?	195,602	98,102	415,221	235,703

Year.	Tea.	Rice.	Dried Cuttle-fish.	*Kanten* (Colle Vegetable.)	Sea-weeds.	Camphor.
1871	4,671,761	?	204,454	108,388	472,798	129,864
1872	4,226,108	?	278,192	78,166	296,492	88,722
1873	4,659,392	533,431	282,030	102,920	397,448	68,437
1874	7,253,405	316,126	383,737	134,243	259,261	155,550
1875	6,862,855	16,059	242,346	201,656	284,883	138,523
1876	5,453,981	810,236	323,079	303,014	397,672	174,318
1877	4,375,275	2,269,091	414,956	245,762	339,975	238,166
1878	4,283,695	4,643,882	379,155	227,498	479,109	323,665
1879	7,445,509	416,879	553,917	269,867	636,383	455,910
1880	7,497,881	210,652	648,388	291,758	577,434	598,224
1881	7,021,593	261,737	477,886	333,048	681,338	706,138
1882	7,029,718	1,652,043	648,682	211,237	408,309	869,128
1883	6,106,496	1,000,941	802,986	242,405	244,669	707,993
1884	5,819,695	2,169,942	789,103	309,084	274,303	549,503
1885	6,854,121	766,759	903,742	345,720	544,745	558,646
1886	7,723,321	3,301,169	1,007,621	392,644	503,377	928,028
1887	7,603,341	2,255,114	1,051,721	337,880	462,000	1,130,596
1888	6,124,816	7,421,239	1,071,963	329,222	373,552	1,017,887
1889	6,156,729	7,434,654	1,088,605	270,511	471,253	1,391,372
1890	6,326,681	1,321,635	1,228,712	323,444	563,505	1,931,993
1891	7,033,050	6,123,332	1,003,703	453,124	618,925	1,629,105
1892	7,525,316	4,162,452	980,307	581,218	818,841	1,274,753
1893	7,702,088	5,001,158	1,426,781	682,140	766,573	1,308,611
1894	7,930,287	5,593,152	1,162,453	495,625	467,235	1,023,956
1895	8,879,242	7,207,346	996,030	449,271	514,275	1,526,832
1896	6,372,329	7,951,087	1,151,143	595,818	486,930	1,119,196
1897	7,860,460	6,141,218	1 413,647	591,057	726,896	1,318,292
1898	8,215,665	5,920,185	1,268,257	611,336	549,355	1,174,574
1899	8,498,783	10,282,012	1,362,068	674,435	780,009	1,754,496
1900	9,035,819	3,576,569	1,158,794	964,322	730,844	3,070,701
1901	8,854,327	6,908,913	1,842,249	1,217,195	1,092,923	3,904,974
1902	10,484,017	6,679,544	1,802,415	1,108,544	609,143	3,404,833

Year.	Sulphur.	Copper, Coarse and Refined.	Fish Oil.	Vegetable Wax.	Raw Silk.	*Noshi* Silk.
1868	6,479	8,687	9,322	308,468	6,253,473	61,748
1869	4,474	—	3,013	93,445	5,720,182	98,539
1870	5,461	100,768	110	102,082	4,278,752	82,908
1871	16,711	142,954	4,169	207,270	8,004,144	127,514
1872	14,487	423,716	15,397	273,520	5,205,237	205,927
1873	19,916	539,643	274	429,840	7,208,421	117,737
1874	35,555	40,717	—	227,699	5,302,039	85,244
1875	24,317	135,685	—	188,027	6,424,916	128,473
1876	41,282	178,684	—	188,724	13,197,921	238,547
1877	17,186	519,758	—	162,207	9,626,956	87,185
1878	35,531	788,929	—	99,909	7,889,446	254,157
1879	37,420	797,726	—	329,975	9,734,534	578,322
1880	37,319	422,056	10,621	244,990	8,606,867	605,294
1881	66,982	579,062	3,098	307,497	10,647,310	961,075
1882	31,225	827,184	105,783	326,368	16,232,150	1,008,149
1883	119,765	724,819	153,782	390,089	16,183,550	1,089,961
1884	66,645	1,386,799	340,269	136,633	11,007,172	1,020,558
1885	137,932	1,825,065	108,166	371,878	13,033 872	672,630
1886	76,763	2,148,840	87,992	326,174	17,321,362	1,297,623
1887	136,023	2,031,514	38,689	326,445	19,280,003	1,264,780
1888	120,903	3,518,787	64,457	381,983	25,916,861	1,434 623
1889	313,322	2,878,969	80,695	350,641	26,616,542	1,424,107
1890	263,284	5,352,313	63,239	266,848	13,859,339	1,445,275
1891	284,832	4,877,089	175,803	316,835	29,356,339	1,428,654
1892	280,963	4,863,922	248,621	285,567	36,269,744	1,896,772
1893	238,832	4,569,229	533,480	383,766	28,167,411	1,594,582
1894	244,542	4 900,754	668,063	562,135	39 353,156	1,632,211
1895	296,136	5,157,667	525,045	334,847	47,866 257	1,347,256
1896	308,588	5,478,602	338,486	371,701	28,830,602	1,247,813
1897	321,341	5,774,699	618,478	730,576	55,630,460	1,187,531
1898	477,014	7,267,075	391,721	609,760	42,047,411	1,082,917
1899	574,868	11,383,358	550,961	642,219	62,627,721	1,298,248
1900	698,284	12,725,935	906,821	561,435	44,657,029	960,687
1901	661,879	13,904,611	1,023,631	610,371	74,667,331	995,407
1902	759,083	10,261,984	1,502,603	789,875	76,859,478	1,694,272

Year.	Silk Waste.	*Habutae.* (Silk Tissues.)	*Kaiki.* (Silk Tissues.)	Silk Handkerchiefs.	Cotton Yarn.	Cotton Flannel.
1868	19,829	?	?	?	?	?
1869	48,472	?	?	?	?	?
1870	44,140	?	?	?	?	?
1871	63,176	?	?	?	?	?
1872	88,011	?	?	?	?	?
1873	83,007	?	?	?	?	?
1874	107,081	?	?	?	?	?
1875	122,658	?	?	?	?	?
1876	227,562	?	?	?	?	?
1877	174,913	?	?	?	?	?
1878	344,957	?	?	?	?	1,812
1879	647,291	?	?	?	?	802
1880	685,221	?	?	?	?	1,008
1881	828,607	?	?	?	?	3,143
1882	1,206,495	?	?	?	?	652
1883	878,973	?	?	?	?	296
1884	655,139	?	?	?	?	326
1885	462,553	?	?	?	?	1,185
1886	833,264	?	?	?	?	1,833
1887	807,548	?	?	1,146,281	?	1,210
1888	944,371	?	?	1,233,927	?	3 907
1889	832,469	?	?	2,104,459	?	3,461
1890	1,126,579	818,537	?	2,516,946	2,364	3,175
1891	1,014 668	1,445,639	?	2,811,820	7,873	22,585
1892	1,314 825	4,030,476	?	3,494,417	7,720	106,100
1893	1,201,182	3,553,604	?	3,899,646	59,176	281,151
1894	1,576,381	7,254,478	?	3,628,129	955,530	221,918
1895	1,515,464	8,354,490	?	5.339.955	1,034,479	400,520
1896	1,516,252	7,052,217	233,809	4,617,720	4,029,425	427,881
1897	1,832,442	9,530,676	186,040	3,390,146	13,490,197	231,749
1898	1,573,014	12,055,505	573,551	3,555,115	20,116,586	350,830
1899	2.775,837	15,799,014	1,451,952	3 461,572	28,521,438	768,952
1900	3,200,631	17,436,381	878,313	4,318,553	20,589,263	602,041
1901	3,473,362	23,912,356	1,315,780	3.951,192	21,465,573	512 448
1902	4,019,524	24,685,408	2,672,887	3,154,237	19 901,522	848 787

Year.	White Cotton Tissues.	Gray Shirtings.	Carpets and Carpetings.	Cigarettes.	Coal.	Fans.
1868	?	?	?	?	79,519	?
1869	?	?	?	?	82,978	193
1870	?	?	?	?	139,085	?
1871	?	?	?	?	100,429	2,055
1872	?	?	?	?	180,278	19,142
1873	?	?	?	?	225,158	49,653
1874	?	?	?	?	146,471	90,977
1875	?	?	?	?	213,385	113,697
1876	?	?	?	?	187,500	132,514
1877	?	?	?	?	289,235	135,899
1878	?	?	?	?	381,974	154,977
1879	?	?	?	?	454,988	239,272
1880	?	?	2,043	165	460,086	240,202
1881	?	?	4,741	709	395,020	224,431
1882	?	?	1,487	572	435,595	156,857
1883	?	?	3,205	1,801	395,389	89,061
1884	?	?	3,707	2,745	607,124	94,994
1885	?	?	2,727	3,613	622,515	107,945
1886	?	?	8,646	3,319	694,002	195,144
1887	?	?	19,833	2,088	496,291	248,925
1888	?	?	52,714	5,077	1,197,825	280,039
1889	?	?	54,215	3,210	2,749,552	252,131
1890	?	?	51,048	8,593	3,099,862	295,448
1891	?	?	94,732	11,229	3,179,203	319,875
1892	?	?	177,446	17,250	2,854,300	304,886
1893	?	?	391,989	29,854	3,288,843	424,156
1894	?	?	1,134,073	56,877	4,674,305	319,416
1895	?	?	1,635,902	115,760	5,409,111	399,519
1896	?	182,113	1,035,195	81,937	6,242,931	693,893
1897	782,698	346,036	847,480	231,611	8,316,776	885,601
1898	694,944	386,226	850,759	133,441	12,240,622	499,233
1899	996,997	669,074	721,127	294,548	11,784,731	532,176
1900	1,778,532	1,754,411	866,591	715,554	13,703,655	911,077
1901	1,357,588	1,347,605	707,770	1,683,320	17,542,273	733,432
1902	1,079,908	1,523,061	653,330	2,188,592	17,270,417	727,458

Year.	Lacquered Wares.	Matches.	Mats.	Porcelain and Earthenwares.	Straw Plaits.	European Umbrellas.
1868	17,065	?	?	23,015	?	?
1869	1,909	?	?	4,704	?	?
1870	43,199	?	?	26,236	?	?
1871	60,387	?	?	22,354	?	?
1872	88,029	?	?	45,531	?	?
1873	159,445	?	?	116,481	?	?
1874	223,201	?	384	108,675	?	?
1875	167,880	?	334	113,224	?	?
1876	116,894	?	636	73,792	?	?
1877	185,262	?	933	120,853	?	?
1878	148,597	20,400	317	169,100	?	?
1879	277,730	83,589	274	307,039	?	?
1880	449,645	369,672	215	474,579	?	7,587
1881	525,415	249,759	927	711,351	?	12,948
1882	555,304	37,240	741	578,641	?	1,610
1883	519,723	3,165	350	543,768	?	966
1884	451,666	2,792	1,325	525,933	?	3,545
1885	467,521	60,566	935	695,269	?	1,762
1886	589,170	378,022	2,709	1,002,384	?	12,083
1887	630,725	941,576	36,296	1,311,901	350,450	26,852
1888	589,649	740,934	148,224	1,295,316	268,557	53,858
1889	628,466	1,137,952	166,883	1,449,888	146,847	84,255
1890	572,157	1,489,030	347,541	1,245,957	87,196	114,228
1891	577,372	1,843,637	656,123	1,287,027	193,777	161,504
1892	528,075	2,202,041	1,176,680	1,480,411	155,162	364,309
1893	708,992	3,537,974	1,723,383	1,577,191	378,349	589,276
1894	797,539	3,795,635	1,965,493	1,484,854	743,399	746,068
1895	1,083,212	4,672,812	3,461,370	1,955,060	1,387,643	735,207
1896	948,734	4,986,260	3,056,759	1,974,854	2,234,354	773,627
1897	767,401	5,641,993	3,232,738	1,819,061	3,181,915	627,050
1898	782,933	6,273,949	3,938,450	1,990,781	2,404,003	687,197
1899	988,662	5,890,666	3,717,489	2,181,336	2,770,178	953,545
1900	1,066,390	5,760,869	3,310,042	2,471,904	4,025,159	860,986
1901	994,654	7,392,869	5,354,976	2,491,668	2,989,836	1,023,638
1902	889,079	8,169,966	6,772,496	2,461,544	2,938,858	1,037,926

CHAPTER V.

PRINCIPAL IMPORTS.

Of the imports into Japan machineries, iron ware, petroleum, sugar, raw cotton, cotton fabrics, woollen goods, etc. are the principal items. Of the machines locomotives and mules surpass all the rest, the former coming from England and the United States and the latter from England. Iron ware come from the United States, and Russian Asia; sugar from China, Hongkong, and Germany; ginned cotton from the United States, Hongkong and British India; cotton goods from England and Germany; woollen goods from England, Germany, Belgium, and France. The advance in the import of all those articles is due to the development of our industry and to the rise of the scale of living of our people. Among those goods, there are many which Japan has begun to manufacture or is about to manufacture with the exception of woollen goods, so that though the import of raw materials or others ministering to one or another manufacturing industry in this country is destined to advance, that of manufactured goods may be expected to decline. Details regarding the value of principal imports are given in the following table:—

TOTAL VALUE OF COMMODITIES IMPORTED.

(unit of *yen*).

Year.	Locomotive Engines.	Fresh Eggs.	Salted Fish.	Flour.	Aniline Dyes.	Dry Indigo.
1868	?	?	?	?	?	1,743
1869	?	?	?	?	?	4,758
1870	?	?	?	?	?	8,546

Year.	Locomotive Engines.	Fresh Eggs.	Salted Fish.	Flour.	Aniline Dyes.	Dry Indigo.
1871	?	?	21	?	?	20,859
1872	?	?	379	?	?	28,724
1873	?	?	267	?	?	3,187
1874	?	?	471	?	?	968
1875	?	?	389	?	?	6,689
1876	?	?	612	?	?	4,353
1877	?	?	298	?	?	7,094
1878	?	?	328	?	?	7,365
1879	?	?	3,875	?	?	9,098
1880	?	?	1,135	?	?	2,902
1881	?	?	10,299	?	?	9,272
1882	?	?	4,514	?	?	12,638
1883	21,842	?	8,367	?	137,059	34,678
1884	60,222	21,979	1,458	?	144,375	1,381
1885	93,292	21,820	728	?	142,432	6,343
1886	90,090	38,421	862	?	185,335	85,518
1887	95,523	46,068	760	?	266,635	56,654
1888	301,197	45,596	3,765	?	367,042	155,721
1889	284,144	28,821	4,582	?	293,234	250,471
1890	659,604	31,370	5,260	226,157	349,579	201,071
1891	595,474	33,442	10,928	340,540	386,604	186,857
1892	200,418	70,444	12,064	275,092	418,482	386,193
1893	356,534	108,056	44,203	319,659	405,047	444,208
1894	1,580,273	56,119	63,198	619,009	543,494	329,861
1895	1,163,695	95,207	107,145	406,855	682,138	581,370
1896	1,620,768	300,389	231,035	994,202	1,139,929	1,067,257
1897	4,235,617	337,769	495,907	1,156,569	931,197	1,538,022
1898	4,282,502	492,553	609,736	2,022,413	1,218,842	2,270,815
1899	1,968,374	826,960	1,212,896	1,370,857	904,013	2,903,829
1900	1,089,209	1,243,065	2,184,846	3,882,517	1,328,751	3,902,559
1901	1,749,408	1,298,611	1,442,790	2,873,302	884,884	2,665,043
1902	1,708,014	1,196,455	2,011,487	3,278,324	1,653,220	3,097,981

Year.	Window Glass.	Soja Beans.	Rice.	Sole Leather.	Pig Iron.	Iron, Bar and Rod.
1868	10,144	?	435,956	?	16,732	?
1869... ...	19,043	?	4,431,886	?	16,902	?
1870... ...	15,616	?	14,598,114	?	4,406	?
1871	32,232	?	1,260,179	?	18,519	?
1872... ...	452,586	?	?	?	2,339	?
1873	103,325	?	29,785	?	23,491	?
1874... ...	55,654	?	24,366	?	38,981	?
1875... ...	58,495	?	22,226	?	91,063	?
1876... ...	100,570	?	590	?	18,015	?
1877... ...	91,885	?	300	?	40,734	?
1878... ...	101,337	?	66	?	44,786	?
1879... ...	68,453	?	248,271	?	31,621	?
1880... ...	105,463	?	434,315	?	82,402	?
1881	98,112	?	134,838	?	112,338	?
1882	36,569	?	20,134	?	95,438	?
1883	137,628	?	69	87,384	116,044	404,590
1884... ...	97,485	?	11,529	137,417	88,436	301,852
1885	109,455	?	674,330	166,986	105,843	296,348
1886	186,405	?	18,757	143,471	101,034	396,720
1887	116,075	?	129,315	260,437	118,369	447,101
1888... ...	160,995	?	21,628	290,664	397,165	749,916
1889... ...	257,248	?	136,756	310,922	164,148	842,511
1890... ...	202,638	?	12,302,884	234,380	185,948	830,116
1891... ...	300,160	?	3,907,991	243,503	199,209	870,410
1892... ...	160,594	?	2,052,901	219,430	241,317	871,702
1893... ...	359,315	?	3,254,842	215,702	446,477	975,787
1894... ...	246,033	?	8,413,148	281,782	743,553	1,339,034
1895... ...	309,802	?	4,357,096	497,774	673,796	2,085,684
1896... ...	570,442	?	5,662,337	576,584	739,556	2,399,705
1897... ...	488,090	5,450,878	21,528,429	462,524	934,010	3,046,132
1898... ...	669,807	6,291,064	48,219,810	716,879	1,381,443	4,061,805
1899	1,256,577	7,891,928	5,960,166	549,029	965,544	2,603,676
1900	952,919	4,425,079	9,021,536	984,798	962,910	5,243,408
1901... ...	1,084,833	5,177,360	11,878,958	590,713	1,593,311	3,511,756
1902... ...	1,581,071	4,956,009	17,750,817	531,392	982,326	3,519,126

Year.	Rails.	Iron, Plate and Sheet.	Galvanized Iron Sheet.	Iron Pipes and Tubes.	Iron Nails.	Iron Wire and Small Rod.
1868	?	?	?	?	?	2,858
1869	?	?	?	?	?	9,748
1870... ...	?	?	?	?	?	18,373
1871	?	?	?	?	?	13,406
1872	?	?	?	?	?	24,780
1873... ...	?	?	?	?	?	12,586
1874	?	?	?	13,199	?	52,428
1875	?	?	?	9,600	?	33,222
1876	?	?	?	10,969	?	33,260
1877... ...	?	?	?	18,167	?	39,577
1878... ...	?	?	?	20,286	?	56,744
1879	?	?	?	31,438	?	40,959
1880	162,915	?	?	23,014	?	55,989
1881... ...	109,047	?	?	24,828	?	38,072
1882... ...	247,638	?	?	26,016	?	60,481
1883	43,386	189,903	?	19,954	268,905	116,959
1884... ...	174,998	186,391	5,515	16,933	294,729	115,993
1885... ...	361,497	166,797	19,683	19,738	414,739	79,462
1886	497,816	211,010	19,536	34,061	456,499	65,008
1887	653,534	218,932	27,531	334,015	393,840	75,650
1888	1,462,429	219,812	57,874	71,589	875,709	75,037
1889... ...	686,871	335,910	78,975	203,110	799,840	87,347
1890... ...	1,259,381	314,067	73,025	166,536	693,791	80,561
1891	700,538	298,007	62,836	106,592	656,179	59,736
1892... ...	67,438	240,584	80,157	55,815	906,422	114,111
1893... ...	667,108	330,098	121,011	122,886	887,790	93,791
1894... ...	1,209,205	726,739	156,740	484,086	1,332,638	86,074
1895	925,531	918,459	112,743	604,753	1,278,056	143,318
1896	2,595,459	1,336,885	310,190	891,339	1,440,254	129,987
1897... ...	3,325,005	1,175,266	541,194	894,582	1,458,294	181,079
1898... ...	2,631,721	1,405,855	464,466	1,332,940	1,150,343	119,924
1899... ...	435,054	2,220,415	902,596	953,436	2,223,432	410,582
1900... ...	4,753,371	4,080,543	1,323,316	2,956,216	2,181,064	1,108,810
1901... ...	1,612,540	2,032,651	703,654	1,591,680	1,364,668	332,751
1902... ...	1,662,700	2,442,791	1,273,640	1,073,638	1,451,125	279,399

Note:—Prior to 1898, the value of imported goods was the original price at the place of their purchase, but, since that year, the cost of insurance, transportation, packing charges and all other expenses incurred up to the time of the arrival at the destination have been added to it.

Year.	Telegraph Wire.	Materials of Bridges and Buildings.	Lead, Pig, Ingot and Slab.	Petroleum or Kerosene Oil.	Printing Paper.	Sugar.
1868	?	?	107,327	7,236	?	529,313
1869	?	?	134,021	1,662	?	1,090,894
1870	?	?	30,618	21,516	?	2,317,921
1871	?	?	17,229	72,170	?	2,188,314
1872	?	?	?	160,608	?	1,156,697
1873	?	?	2,222	330,599	?	1,599,960
1874	?	?	8,187	306,723	?	1,888,935
1875	?	?	24,634	573,671	?	2,582,890
1876	?	?	63,771	444,134	?	2,185,982
1877	?	?	287,775	605,598	?	2,105,026
1878	?	?	187,595	1,803,076	?	2,222,975
1879	?	?	104,655	2,185,224	?	2,375,757
1880	58,611	?	51,134	1,400,471	?	2,480,580
1881	13,976	?	87,208	979,112	?	2,287,158
1882	1,759	?	46,796	2,320,905	?	2,887,888
1883	30,111	?	134,387	2,456,261	38,159	2,581,639
1884	2,104	?	67,958	1,773,361	21,264	2,917,032
1885	93	?	16,678	1,667,722	24,729	2,144,291
1886	2,935	?	71,667	2,358,498	62,383	1,928,698
1887	2,837	?	108,835	1,871,428	115,171	2,418,898
1888	27,745	?	201,252	3,519,255	387,682	2,428,608
1889	33,549	?	173,487	4,587,135	178,335	2,078,136
1890	74,357	?	85,425	4,950,256	413,486	2,974,074
1891	60,286	?	104,028	4,535,720	159,622	2,461,625
1892	89,294	?	245,383	3,328,398	217,310	2,810,331
1893	121,986	?	149,328	4,401,041	217,695	3,514,720
1894	142,215	?	177,638	5,135,332	257,857	4,551,848
1895	205,714	?	313,632	4,303,929	307,699	4,074,241
1896	506,490	579,520	257,383	6,331,036	723,438	3,480,588
1897	477,775	937,379	257,805	7,667,350	856,957	4,809,455
1898	408,842	1,908,562	365,202	7,552,880	2,283,215	7,333,700
1899	817,200	285,842	412,155	7,918,149	748,414	8,359,736
1900	1,095,575	1,880,314	927,152	14,162,652	2,036,844	11,007,634
1901	683,658	1,481,153	876,228	14,943,401	864,041	12,381,466
1902	799,983	341,797	510,713	14,937,169	1,402,862	8,778,657

Year.	Sugar Refined.	Ginned Raw Cotton.	Raw Cotton in the Seed.	Cotton Yarns.	Cotton Flannel.	Cotton Prints.
1868	356,836	421,874	?	1,239,580	?	77,051
1869	531,340	1,087,992	?	3,418,148	?	109,882
1870	729,832	628,308	?	4,522,194	?	200,097
1871	845,777	206,799	?	3,520,141	?	216,602
1872	533,508	85,703	?	5,335,141	?	210,354
1873	576,012	264,430	?	3,400,225	?	246,186
1874	706,180	1,091,447	?	3,573,257	?	104,509
1875	842,574	371,132	?	4,058,036	?	195,554
1876	595,388	456,362	?	4,151,664	?	207,067
1877	688,653	418,125	?	4,084,714	?	196,247
1878	666,631	287,641	?	7,205,931	?	282,775
1879	974,168	101,603	?	6,179,857	?	179,377
1880	1,055,067	170,639	?	7,700,477	?	392,539
1881	1,444,434	196,721	?	7,263,776	?	407,038
1882	1,557,908	467,249	?	6,562,012	?	107,442
1883	1,810,707	247,506	?	6,164,721	?	233,197
1884	2,452,516	561,262	?	5,153,252	?	244,634
1885	2,527,168	601,778	207,294	5,190,095	?	208,191
1886	3,641,226	618,429	76,657	5,905,457	?	145,957
1887	3,318,503	711,952	202,016	8,235,204	?	318,375
1888	4,451,681	1,652,244	569,525	13,611,898	?	389,070
1889	4,151,356	3,464,326	2,204,512	12,522,039	?	398,560
1890	5,436,068	4,134,790	1,230,363	9,928,092	?	478,463
1891	5,289,387	6,998,534	1,200,717	5,589,290	?	140,905
1892	6,724,254	11,026,637	1,298,017	7,131,980	?	436,545
1893	7,957,211	15,294,898	856,673	7,284,243	?	635,903
1894	8,707,392	19,103,923	506,838	7,977,366	?	521,697
1895	7,673,018	24,304,814	517,283	7,082,975	?	383,365
1896	10,263,358	32,106,276	467,076	11,371,950	?	1,193,162
1897	15,013,320	43,122,263	497,952	9,625,258	252,929	986,443
1898	21,105,595	45,410,457	333,914	8,547,589	602,781	1,176,789
1899	9,156,303	61,365,755	844,962	4,963,326	797,425	1,438,245
1900	15,598,894	58,500,002	971,627	7,043,046	1,515,409	2,002,732
1901	21,111,901	59,799,300	851,062	4,873,738	234,672	680,468
1902	5,589,157	78,779,858	1,004,914	1,747,875	704,812	2,602,032

Year.	Cotton Satins.	Gray Shirtings.	White Shirtings.	Wool.	Woolen and Worsted Yarns of All Kinds.	Flannels.
1868... ...	355	1,504,788	?	?	?	10,745
1869... ...	1,565	1,666,241	407	?	?	5,498
1870... ...	130	1,727,037	—	?	?	8,099
1871... ...	—	4,362,020	49,398	?	?	8,514
1872... ...	308,698	3,117,956	20,052	?	?	105,324
1873... ...	294,870	3,043,702	60,325	?	?	224,032
1874... ...	74,987	3,594,994	27,770	?	498	30,229
1875... ...	218,739	2,425,676	44,646	?	149	45,695
1876... ...	201,397	2,187,265	29,235	?	4,790	39,896
1877... ...	271,023	1,835,213	64,335	?	879	130,578
1878... ...	294,465	1,881,821	85,961	?	1,448	170,983
1879... ...	356,158	3,359,593	68,958	?	1,231	34,358
1880... ...	478,259	2,208,711	102,738	?	3,639	28,348
1881... ...	416,458	1,914,316	103,738	?	2,022	60,317
1882... ...	96,179	2,426,822	94,676	?	4,043	105,785
1883... ...	157,843	1,092,743	115,951	89,845	2,994	94,583
1884... ...	98,547	855,920	120,796	42,519	2,323	172,588
1885... ...	103,148	1,233,746	98,814	75,385	10,218	287,182
1886... ...	47,994	848,370	120,851	150,002	60,831	318,180
1887... ...	198,991	1,169,817	266,800	189,899	255,302	323,780
1888... ...	298,761	2,332,564	212,652	300,369	165,295	549,357
1889... ...	189,583	2,010,715	174,125	302,085	256,112	1,029,986
1890... ...	231,592	1,716,981	225,889	369,914	494,316	927,562
1891... ...	135,880	1,656,681	216,895	206,548	168,385	406,860
1892... ...	525,658	1,727,186	330,559	302,502	427,993	1,073,743
1893... ...	855,398	2,315,124	168,305	425,120	513,930	1,389,714
1894... ...	1,266,151	2,935,034	337,607	567,197	563,501	308,834
1895... ...	794,136	3,071,496	505,720	1,136,951	951,035	961,332
1896... ...	2,610,925	4,057,692	655,449	1,017,441	1,114,872	1,997,245
1897... ...	1,796,973	3,783,309	250,864	1,062,398	1,337,424	1,187,656
1898... ...	1,645,229	4,382,509	708,348	1,642,819	785,192	1,360,038
1899... ...	949,750	3,575,191	517,808	4,324,427	593,338	374,959
1900... ...	3,662,638	5,558,004	1,325,142	3,919,413	1,798,535	917,932
1901... ...	1,684,497	2,991,651	575,743	3,127,760	866,760	313,297
1902... ...	1,788,536	5,070,651	1,191,777	3,397,564	922,147	487,350

Year.	Italian Cloths.	Mousseline de Laine of All Kinds.	Woolen and Worsted Cloths.	Woolen and Worsted Cloths in Part of Cotton.	Plush or Velvets, Silk and Cotton Mixture.
1868	2,786	73,278	235,345	?	?
1869	—	—	606,171	?	?
1870	42,617	—	646,306	?	?
1871	17,759	—	840,039	?	?
1872	—	—	3,036,480	?	?
1873	155,599	1,076,444	1,320,896	?	?
1874	50,616	981,237	112,887	?	?
1875	214,695	2,393,158	530,868	?	?
1876	188,480	2,263,273	594,601	?	?
1877	496,081	2,373,621	684,936	?	?
1878	339,814	2,693,767	702,653	?	?
1879	651,929	3,126,043	212,109	?	?
1880	898,429	3,478,057	188,484	?	?
1881	531,827	2,709,341	89,235	?	?
1882	573,495	1,221,785	181,881	?	?
1883	995,091	1,618,072	192,121	80,578	?
1884	450,338	1,839,998	467,642	68,072	?
1885	828,055	906,617	391,905	82,440	?
1886	857,537	830,774	615,574	198,547	?
1887	921,662	1,126,675	1,402,809	501,928	?
1888	1,485,059	2,364,092	1,041,539	225,264	?
1889	1,378,852	1,979,344	606,323	195,825	?
1890	1,686,642	2,784,393	901,130	155,198	?
1891	1,846,328	1,891,884	432,001	64,946	?
1892	1,062,572	2,448,900	640,417	196,618	?
1893	1,489,305	2,305,506	801,408	378,799	?
1894	1,759,796	3,150,823	641,270	175,559	?
1895	921,741	3,633,468	2,951,042	169,266	?
1896	2,813,097	6,498,162	3,407,151	706,902	136,470
1897	1,815,582	3,835,881	1,943,532	290,544	325,647
1898	1,068,270	4,408,753	2,803,607	444,144	599,495
1899	1,132,575	4,350,934	2,004,198	531,554	675,231
1900	1,120,737	7,364,991	2,969,763	2,437,123	984,935
1901	601,439	3,339,121	1,318,162	901,395	379,402
1902	1,181,175	3,754,836	2,000,012	1,430,034	631,233

Year.	Flax, Hemp, Jute and China Grass.	Leaf-Tobacco.	Coal.	Oil-Cakes.
1868...	?	?	33,754	537
1869...	39	?	96,739	669
1870...	—	?	24,963	50,765
1871...	78	?	145,237	102,333
1872...	—	?	179,758	3,738
1873...	15,298	?	236,711	1,354
1874...	11,385	?	99,960	24,626
1875...	6,836	?	147,513	10,900
1876...	3,695	?	193,601	408
1877...	4,232	?	159,073	40
1878...	9,975	?	257,122	25,036
1879...	58,551	?	164,636	118,965
1880...	88,199	?	156,227	233,110
1881...	62,970	?	256,625	29,335
1682...	34,966	?	149,716	44,468
1883...	18,399	?	103,322	11,802
1884...	20,132	?	21,685	361
1885...	20,139	?	85,038	21,672
1886...	23,413	?	65,383	965
1887...	50,292	?	65,275	229,687
1888...	88,069	?	29,880	164,193
1889...	93,611	?	40,015	201,953
1890...	139,777	?	110,497	194,296
1891...	149,661	?	142,918	355,989
1892...	213,217	?	105,380	824,652
1893...	326,337	?	81,707	599,893
1894...	537,925	?	472,757	822,195
1895...	645,841	?	853,080	946,028
1896...	708,162	35,537	519,380	3,220,600
1897...	654,791	320,854	578,570	3,315,587
1898...	590,517	4,527,660	399,189	4,614,967
1899...	1,245,049	5,086,354	937,094	6,791,813
1900...	1,700,409	454,293	2,100,054	5,722,764
1901...	1,370,183	30,272	2,542,133	8,115,908
1902...	1,602,799	956,817	1,298,374	10,121,712

CHAPTER VI.

PROVISIONS FOR ENCOURAGING FOREIGN TRADE.

1. CHAMBERS OF COMMERCE :—Commercial and industrial bodies discharging the functions of regular chambers of commerce had previously existed in Japan even prior to the Restoration, but as an institution owing its origin to regular legislative arrangements the Chamber of Commerce first saw the light in September 1890. Since that time 58 chambers have already been established throughout the country. The regulations about the Chambers of Commerce having proved defective in working, officials were sent to the West to investigate the organization of the institutions as they existed there. A draft was drawn up after careful investigations by the Government and leading business-men into the system of the Western organizations of this description, and a new law was promulgated in March 1902, this law being now in force. To enumerate the principal clauses in the new legislature, the Chamber is; (1) a juridical person; (2) qualified to investigate all measures calculated to encourage trade and industry; (3) to represent to the offices concerned its views about legislature relating to trade and industry and also on all matters relating to the interests of trade and industry; (4) to give reply to the queries referred to it by the offices concerned; (5) to inquire into the situation of trade and industry and to compile statistics bearing on the same subject; (6) to undertake similar inquiries at the request of merchants or manufacturers, and also to gurantee the place of produce, price, etc., of commodities; (7) to appoint, at the request of Government offices, appraisers or consulting agents relating to trade or industry; (8) to act as arbitrator in disputes of merchants or manufacturers at request of the parties concerned; (9) to establish, subject to the approval of the Minister of Agriculture and Commerce, institutions of a commercial or industrial character or to manage them or to make other provisions calculated to encourage trade or industry.

The right of election and the right of eligibility for member-

ship are confined only to Japanese subjects or to juridical persons established under Japanese laws. The right of election is accorded to those who are carrying on in their own names business coming under Arts. 263 and 264 of the Commercial Code; or those who are engaged in manufacturing business coming under those provisions, also to exchanges, mine-owners, and directors of juridical persons undertaking business on a large scale. The qualifications for the enjoyment of the right are precisely specified and only those who possess the right are eligible. The regular number of members must not be more than 50; besides there are "special members" not exceeding one-fifth of the number of regular members. The election is carried on according to the method of ordinary election, compound election and class-election. The expenses for maintaining chambers are to be borne by those enjoying the right of election.

Besides the chambers existing at home, the Japanese subjects residing in the various part of Korea, as Fusan, Mukpho, Gensan and Jinsen have chambers of their own. Though their establishment is subject to the approval of the Japanese Consuls, those chambers do not come under the control of Japanese laws.

A number of legislative measures besides the Law of Chambers of Commerce are in force, to regulate matters relating to the institution.

2. The Higher Council of Agriculture, Commerce and Industry.—The Government does not neglect to make provisions calculated for encouraging foreign trade, on the contrary it has set apart since the 1896-'97 an item of foreign trade expansion expense in the Budget. One of such provisions was the creation of the Higher Council of Agriculture, Commerce and Industry established in 1896 with the object of devising measures for encouraging foreign trade. The council is composed of twenty members apart from a chairman and a vice-chairman. Of the members five are officials of the Departments of Agriculture and Commerce, Foreign Affairs, Finance, and Communications, and the remaining fifteen are business men of note. At first the council deliberated on matters relating to foreign trade alone, as may be seen from the subjects placed before it for deliberation by the Department of Agriculture and Commerce in its first session. Those subjects were as follows:—matters relating to (1) the dispatch of commissioners to the Yangtesking region of

China to investigate the navigation route there, (2) the expansion of banking facilities in connection with foreign trade, (3) the establishment of bonded warehouses under supervision of the Customs Houses, (4) the expansion of sale of the principal exports, (5) correspondence on the situation of foreign markets, (6) marine insurance, (7) control and protection of workmen (the above were placed before the 1896 session of the Diet), (8) the operation of the gold monometallic system and its effect on agriculture, commerce and industry at home, (9) its effect on foreign trade, (10) the measures to be adopted for minimizing the evil side and for increasing the beneficial side of that effect, (11) encouragement of the business of tea exporting, (12) encouragement of exportation of silk (the above were principal subjects discussed in the second session held in 1897.) The council also deliberated on sundry other matters at its own initiation and passed a resolution, to give one of such instances, totally abolishing export duties.

In June, 1897, the organization of the council was amended so as to allow it to deliberate on matters relating to domestic trade as well as on matters relating to foreign trade. The number of the the members was at the same time increased from 20 to 30.

3. Inspection of Foreign Markets.—The Government has been dispatching from 1895 a number of officials and commissioners to foreign countries to cause them to investigate the state of the foreign markets, especially with the object of promoting direct export by our merchants, and also inquiring into other matters calculated to further the interests of foreign trade. Besides Government officials, student commercial agents and student manufacturers, and private individuals experienced in respective lines of trade were despatched on similar missions, the chambers supplying them with either a part or the whole of the travelling expenses. During the eight years from the 1895 to 1901 fiscal years altogether 124 people were sent abroad, some of them to China, others to Europe, and still others to North and South America, and a few to the South Seas, the Strait Settlements, Siberia, Korea, India, the Philippines, etc.

4. Industrial Guilds.—An outline history of regislative measures relating to industrial guilds having been given in a section of Agriculture, a brief survey of the formation of guilds of industrial and commercial interests may be sufficient in this place.

As matters relating to the guilds were left outside the control of Government offices prior to 1884 when rules were enacted requiring the approval of the authorities in forming a guild, it is not possible to ascertain how many guilds of different interests had previously existed throughout the country. The returns drawn up in November 1886 first supply reliable information on this subject. The number was as follows at that time:—

Commercial Guilds	628
Industrial Guilds...	404
Commercial and Industrial Guilds	547
Total...	1,579

On the issue of the Staple Exports Guild Law in 1897, a numbers of guilds organized under the former regulations were abolished, so that at the end of 1889 the guilds numbered as follow:—

Commercial Guilds	538
Industrial Guilds...	442
Commercial and Industrial Guilds	188
Total...	1,168

The replacement of the Law in question by the Staple Commodities Law in 1900 was again followed by change in the figures, thus:—

Commercial Guilds	529
Industrial Guilds...	433
Commercial and Industrial Guilds	187
Total...	1,149

Of the foregoing number of guilds quite a large portion have been established in conformity with the Staple Export Guilds Law and its suecessor the Staple Commodities Guild Law. This is showfs in the following table:—

Year.	Commercial.	Industrial.	Com. & In'al.	Total.	Dissolved.	Number existing.
1898	18	18	24	60	—	60
1899	27	26	52	103	—	165
1900	18	13	43	71	2	237
1901	10	11	21	42	4	275
As existing at the end of 1901...	73	62	140	—	—	—

According to the returns made in July, 1902, the guilds engaged in the manufacturing business numbered 61, and those in sales and in manufacture and sales numbered respectively 66 and 150.

5. Student Commercial Agents and Manufacturers.—These constitute one of the regular measures adopted since 1896 as a means of expanding our foreign trade. The object is to send abroad capable young men so that they can get a practical training either at commercial establishments or in factories. The candidates are selected from among those recommended by leading business-men and other influential people of the provinces. A certain amount of pecuniary help is given to the students, though there are some who decline it. All those students, whether receiving help or not, are under the control of our nearest legations or consulates, and the students receiving help are obliged to regularly send a report to the home Government about the given subjects which they are intended to be studying. The number of students and the places where they got training were as follows:—

1896—10; one each at Mexico, Germany, England, France, China, five at the United States of America.

1897—13 (10 continued from the preceding year); one at Bombay, two additional at U.S.A; the rest as above.

1898—16 (13 continued from the preceding year, 4 new, and 2 not receiving help): one each at Mexico, Germany, England, British India, three each at China and France, eight at U.S.A.

1899—47 (15 continued from the preceding year, 27 new, 5 not receiving help): one each at Mexico, England, Belgium, Russia, Siberia, Australia, British India; six at France, five at Germany; 15 at U.S. America; 12 at China.

1900—58 (32 continued from the preceding year, 24 new, 2 not receiving help); 16 at U. S. America; 12 at France, six at Germany, two each at England, Russia and Siberia, one each at Belgium and Australia, 14 at China.

1901—97 (31 continued from the preceding year, 59 new, and 7 without receiving help); 11 each at France and Germany, two each at British Canada, Mexico, Peru, Strait Settlements, and Java, three each at Belgium, Hongkong and Australia, Siberia, one each at Russia, Switzerland, and Philippines, 14 at U. S. America, 25 at China.

6. Commercial Samples Museum.—Japan possesses 38 commercial samples museums, not to mention those that are now being set up.

The Commercial Museum established in premises of the Department of Agriculture and Commerce being the most important of the institutions of this description though not the oldest, deserves to be described here at some length. It was established eight years ago, and contains 23,161 samples of which 12,756 are of foreign and the remaining 10,405 of domestic origin. Besides, there are 4,188 by foreigners and Japanese.

The samples collected by the Museum comprise in regard to domestic produce, commodities that now constitute the principal items of export or are likely to become so in the near future, also those that are competing with imported goods on our market or are qualified to do so. As to the foreign samples collected, they represent commodities of principal import or those that are likely to become so, or those that are actually competing or are likely to do so on foreign markets with the goods exported from Japan. Then samples judged to represent the situation of our industry in all its manifold forms are also placed on view in the Museum, as also raw materials of all descriptions both foreign and Japanese, that are judged capable of being exploited with profit in Japan. The Museum keeps in touch with the movement of our trade and with the situation of all important commodities, and while it serves as a medium of presenting in a business-like way all the succinct points which foreign merchants or manufacturers may wish to know about our goods in opening regular transaction with our merchants or manufacturers, the latter are similarly supplied with all the necessary information about foreign goods. This intermediary function played by the Museum is highly appreciated both by our countrymen as well as by foreigners, so that while the Museum keeps up at the request of our people correspondence with Japanese consulates, foreign museums and such bodies so as to find for their goods suitable markets abroad, the institution extends to similar applications coming from foreign countries an equal amount of attention and satisfaction. In short the Museum is now widely regarded as one of the most convenient institutions both by Japanese and foreigners for keeping

themselves in touch with the situation of commerce and industry both at home and abroad.

With this growing importance of the Museum, the number of samples either presented by Japanese or foreigners or of applications from them to place their samples on view has began to increase to a marked extent, and the Museum is even now embarrassed to find room for those samples. This is indeed a great advance on the time when the Museum experienced no small difficulty in inducing Japanese or foreign merchants or manufacturers to send samples of their goods to be exhibited in its rooms.

The Museum makes a loan of its exhibits or sometimes spares a number of its exhibits to local museums or shows with the object of more widely extending the benefit for which it was established. It also keeps up a regular correspondence with foreign museums or commercial schools, exchanges printed matters with them, and in short spares no pains for efficiently discharging its function.

7. Commercial Sample Museums Abroad.—The establishment of commercial sample museums in foreign countries was another item included in the foreign trade expansion programme inaugurated in 1895. The museums are placed under the control of the Japanese Consulates and are left in charge of merchants properly qualified for the purpose and also qualified to act as a medium for the conclusion of transactions between Japanese and foreign merchants or manufacturers. The museums thus organized numbered six in the opening year, and were established at Vladivostock, Odessa, Bombay, Singapore, Shasi, and Mexico. In the following year one was established at Amoy. From that time till the 1902 fiscal year several others have been started at different places, but as some whose existence was not justified by results, have been closed, at the end of the year in question the official museums existed at the following places, viz. Shasi, Hangkow, Chunking, Bombay, Newchwang, Singapore, and Bangkok. At the same time a number of private sample museums have been granted state aids, these being the Ping-Yang-Hong at Fuchow, Seoul Commercial Museum at the Korean capital, the Japan-China Commercial Museum at Shanghai, and one at Constantinople. It may be stated that the samples on view at the official commercial museums comprise articles either purchased by

the Government or articles presented by merchants or manufacturers concerned.

8. Experimental production of commercial commodities.—Since 1896 the Government has caused technical schools and workshops to undertake by trust the production of commodities at the request of the Government. The result of this experimental work cannot fail to improve and encourage the respective lines of industry and it has been made public.

9. Industrial Reports.—The Bureaux of the Department of Agriculture and Commerce concerned have been compiling reports since 1895 on industrial subjects respectively left in their charge, especially in their bearing to foreign markets and the situation of production at home. These reports which are supplying a want long felt by all the public are being distributed among the Government Offices, public institutions, and business people. The subjects previously treated were cotton fabrics, umbrellas, wood-ware, rape-seed oil, wood, wax, copper and bronze-ware, silk fabrics, handkerchiefs and other silk-ware, rugs, porcelain and earthenware, cloisonne-ware; cotton yarns, straw-plaits, matches, glass-ware, matting, paper and paper-ware, lacquer-ware, screens, and fans. To this list cigarettes and other manufactured tobacco, brushes, iron-ware, buttons, clocks, soap, cotton blankets, cotton knit-work, cement, cotton undershirts, stockings, beer, *sake* and other liquors, and soy have lately been added.

Besides the reports forwarded by Japanese Consuls, student commercial agents and manufacturers, and also reports embodying the result of investigations made either at home or abroad on industrial matters, have been published and similarly distributed.

PART V.

FINANCES.

CHAPTER I.—Finances.

Central Finances—Formosan Finances—Local Finances—Debts —Currency—Money Market—Banks—Clearing-Houses.

I. CENTRAL FINANCES.

FINANCES BEFORE THE RESTORATION.—Though circumstances made it comparatively easy of accomplishment the work of reinstating the Imperial Government, nevertheless it involved in the adjustment of the finances labor of stupendous description. This was principally due to the necessity of unifying the different financial systems that had been followed for a long period by the 277 feudal daimyates that existed during the pre-Restoration days, systems that were, too, in a state of extreme disorder and complication. The reason is because many of the feudal princes had been compelled by necessity to make various shifts, such as issuing fiat currency, minting debased coins, ordering the payment of taxes in advance or contracting loans. The debts for which the feudal princes thus made themselves responsible were enormous, and these devolved entirely on the Imperial Government.

Feudal Fiefs.

On the other hand the revenue was in arears to an astonishing extent, for its only important resource, the Land Tax, did not supply more than one-tenth of the whole expenditure. The Government had therefore to fall back on issuing inconvertible notes to meet this deficit. For several years after the advent of the Restoration, the finances remained in this deplorable condition. In the meanwhile

the Government energetically strove to establish the taxation system on a regular and sound basis. For this the first thing that demanded attention was to definitely define in regard to land the right of fief formerly exercised by the feudal princes and the right of ownership by private individuals. As was generally the case in most other places where feudalism prevailed, this distinction was far from clear; the princes besides exercising the right of control held at the same time a sort of right of ownership over all the land in their respective dominions. The right of ownership was therefore rather the right of tenantry, and the tax or tenant-rate, paid with rice, was the principal source of revenue to the feudal princes. The rate of this so-called tax was not uniform; but it was excessively heavy, ranging from 30 to 70 per cent. of the yield of the field. Some sort of tax was also imposed on manufacture, but this was of course insignificant.

The revenue of the princes was principally devoted to maintaining their military organization and supporting their retainers. The farmers and merchants were therefore made use of merely as tool for supporting this unproductive class.

The Shogunate.—The Shogunate was peculiarly situated in regard to finances. It exercised the power of control over the feudal princes, but it did not govern directly the people inhabiting the princes' fiefs as apportioned by the Shogunate. The people in those fiefs were not therefore obliged to pay any tax to the central Government, and all their duties in that direction ended with their respective lords. The princes, however, were under obligation to discharge at their own expense the military and other services demanded by the Shogunate, and also to pay tribute, mostly nominal, to it. The ordinary revenue of the Shogunate consisted of the taxes levied in its own dominions, so that in this respect the Shogunate was in a position no better than the feudal princes it had under its control. Indeed the Shogunate's revenue was even less than that of some powerful princes.

Financial Difficulties of the Restored Imperial Government.—The Imperial Government therefore at once found itself confronted by a grave financial complication when, on the fall of the feudal system, the real right of administration passed into its

hand. Moverover the transfer of the power of the central administration to the new Government in 1868 was not accompanied in practice by that of the national revenue. Even the revenue that the Shogunate enjoyed did not wholly go to the revenue of the rehabilitated Government, and yet it had to undertake the gigantic task of thoroughly reorganizing political and social institutions. It was necessary first of all to devise some financial arrangements which all those undertakings absolutely required. As the first step towards consummating these arrangements, the Government had to deal with the important question of the fiefs and pensions of the feudal princes and their retainers. This was the most delicate affair of all, inasmuch as the restoration of the Imperial régime was by no means welcomed by all sections of the people; on the contrary some of them were, for one reason or another, bitterly opposed to it. But for accomplishing this grand work of the unification of administration, which was the primary object of the reinstatement of the Imperial power, it was absolutely necessary to secure the compliance to it of all the influential quarters, and with their compliance to put all the important measures under the new political system. This mighty national movement was fortunately backed by all the powerful feudal princes, who in 1869 surrendered their fiefs of their own accord to the central Government, and thus laid the foundation of the present imposing fabric of the Imperial Government. With the enforcement in 1871 of the local system, the reality of administrative unification was first brought about. The privileges enjoyed by the feudal princes and their retainers were annuled, the whole country was placed under one and the same legislative measures, and all the distinctions of social rank and class were abolished.

Private Individuals and Ownership of Land.—With regard to the surrender of their fiefs by the feudal princes, which led to the clear setting up of the right of ownership of land by private individuals, those princes were actuated by the noble altruistic principle, acknowledging themselves as subjects of the sovereign and therefore not entitled to any sovereign right over land or to rule people who were subjects of the same rightful lord as themselves. On its own part, the reinstated Government, while maintaining its

authority in accordance with the advanced principles of law, apportioned in a fair and equitable manner the right of ownership of land to private individuals, and paved the way toward laying the foundation of sound finances. The duty of people as tax-payers was for the first time solved properly, and the burden of taxation was made uniform throughout the whole land.

THE LAND TAX.—In establishing the system of finance the Government undertook first of all the re-arrangement of the Land Tax, and this is a measure which should remain prominent in the financial history of the Empire.

It was 1871 that the measures relating to it were taken in hand. In 1873 a law embodying the result of the deliberations and investigations conducted in this connection was promulgated, but it was not till ten year later that the great work of reorganizing the tax had been completed. This taxation measure was one of special importance, in that it first established in a thorough manner the principle of the unification of the taxes.

The principal features in the new Land Tax law were these;—

(*a*). The establishment in a firm and fixed way of the right of ownership of land by private individuals.

When feudal system was abolished in European countries the central government had to pay a price for the fiefs held by the feudal lords, but in Japan the feudal lords were recompensed with public bonds when they were induced to surrender their dominions.

(*b*). The removal of all the restrictions that had formerly existed in connection with the ownership of land by private individuals.

During the pre-Restoration days the purchase or sale of land by common people was forbidden; nor were farmers left free in determining the crop they wished to cultivate in their land. The fact was as rice was used as medium for the payment of the Land Tax, and as the production of this cereal was therefore regarded as the most important factor in the economy of the various little states, the feudal governments were apt to interfere in the work of the farmers to the extent of ordering the cultivation of rice even when the soil was not

suited for it. The new Law of Land Tax while confirming indisputably the right of individuals to own land, removed all restrictions on land, and allowed land-owners to sell or mortgage their land or to use it in any way they liked. The discontinuation of that pernicious practice of interference has enabled the farmers to utilize their land to the best advantage, and to further the development of the national resources.

(*c*). The determination of the official value of land throughout the country.

As the products of the land formed the basis of taxations in former times, the tax-gatheres of each feudal government inspected every year the condition of the harvest in the dominions of such government and determined the rate of the tax payable for the year. There was no fixed rate. The new Government decided to determine the official value of the land and to place the taxation on a basis at once sound and fair. It was a gigantic task, but with admirable energy the Government set about the work, and finally completed it in a comparatively short space of time. The method adopted in determining the official value consisted in taking the average harvest for five years, to convert it into money by taking the average price ruling in the same period, using that price as basis of capitalization and of hence determining the value of the land. The work was concluded in 1881. To carry the valuation to a state of greater perfection and fairness, the re-assessment was carried out in 1899.

(*d*). The payment of taxes with money.

Taxes were formerly payable in kind, that is in rice or some other such produce. By the enforcement of the new law of taxation and the cessation of the quasi-tenantry nature of the Land Tax, the tax began to be paid with money and by fixed rate according to the official value of the land.

All those changes have considerably reduced the burden of the farmers. The tax was at first fixed at 3 per cent. of the assessed value, but this was reduced to $2\frac{1}{2}$ per cent. in 1877. After having remained unaltered for a long while the rate was

slightly raised, for five years ending 1903, the increase being at the rate of 2½ per cent. of the assessed value for dwelling land in urban districts and 8/1,000 for other kinds of land. With the expiration of this period the rate was restored to the original rate, that is from 1904.

Such is a brief history of the Land Tax Law. It may be thought strange that this particular tax should have occupied such a prominent position in the finances of the Government in the early stage of its re-instatement. The reason is simply this, that Japan was at that time an almost purely agricultural country and all other forms of industry, such as manufactures, etc., were then in a very primitive state. Thus in the year when the assessment of the value of land was completed, the proceeds of the Land Tax amounted to 43,000,000 *yen* out of the total of 60,000,000 *yen* derived from all kinds of taxes.

New Taxes.—With the progress of the country, however, demands on State disbursements necessarily advanced, and the Government was obliged to seek some suitable sources from which new taxes could be collected. The sources from which taxes had been drawn during the pre-Restoration days were throughly investigated, and it was decided that some indirect taxes should be imposed. The result was, in 1887 a new indirect tax, in the shape of an income tax was inaugurated.

The Tax on Sake.—Of the indirect taxes newly established, the tax on *sake* was, as it is still to-day, the most important. The system as enforced to-day consists in levying the tax according to the quantity of the liquor brewed, that is per *koku*. The tax was created in 1878. The rate of the tax has been advanced by rather rapid stages, and what was only 4 *yen* per *koku* before the adoption of the so-called post-bellum programme has been raised to 15 *yen*.

Effect of the Japan-China War on National Finances.—Indeed the expansion of national finances since the Japan-China War has been something extraordinary. Prior to that the expenditure amounted to about 80 million *yen*. In the 1896–'7 fiscal year, when several post-bellum expansion measures had been inaugurated, the corresponding figures rose at one jump to 170 million *yen*, then to 220 million *yen* in the 1899–'8 year, 290 millions in the 1900–'1 year, and 280 millions in the 1902–'3 year. The war, in

short, marks a new era for our finances, as indeed for all other affairs in Japan both public and private.

THE POST-BELLUM PROGRAMME.—The successful conduct of the post-bellum measures demanding the expansion of the finance hand in hand with the development of economic resources, the Government, while raising taxes or floating loans, has not neglected to take such measures as were calculated to encourage the development of economic undertakings, such as the improvement of the monetary system or the establishment of additional important banking mechanisms. This subject of post-bellum finance covering wide field, it is impossible to treat it here at any length, so that the reader who is interested in the subject is advised to consult the History of the Post-bellum Finance published in English by the Imperial Japanese Treasury. All that can be stated here about this great question will be merely categorical. Suffice it here to state that, of the large number of measures undertaken in that programme, the most important are the expansion of national armaments, the establishment of the Iron Foundery, the expansion of the existing railroads and construction of the new, the expansion of the telephone and telegraphic service; the creation of the Imperial Kyoto University and of additional Higher Schools and Technical and Commercial Institutes; the establishment of the Japan Hypothec Bank, of Local Hypothec Banks, Hokkaidō Colonial Bank and of the Formosan Bank; and lastly several other measures for promoting agriculture, manufacture and trade; and then engineering work for controlling unruly rivers. All those measures have been carried out with a view to developing the national resources and industries.

It being impossible to meet with the proceeds of the ordinary revenue the enormous expenses involved in the undertakings contemplated, it was decided that the outlays on account of those extraordinary works should be met by means of the Indemnity and loans, and that the additional requirement on account of ordinary expenditures should be obtained by increased tax measures. In pursuance of this policy these measures were carried out in the 1896-'7 fiscal year, then in the 1898-'9 and lastly in the 1901-'2, the additional proceed from this new source being estimated to amount to 95 million *yen*, as will be demonstrated in the following paragraphs.

The Tax on *Saké* that stood at the rate of 9 *yen* per *koku* in 1896 was raised to 12 in 1898 and 15 in 1901. The latest tax on liquor is that on beer which is at the rate of 7 *yen* per *koku*.

Tax on Sake.

The proceeds from the tax on all the different kinds of liquors amount to about 55 million *yen*, so that this source stands at the head of all direct or indirect taxes in the amount it yields to the revenue.

The rate of the Land Tax increased in 1899 to 3.3 per cent of the assessed value brought in an additional revenue of about 8 million *yen*. but this addition was procurable for only five years ending 1903, when the rate was restored to the original 2½ per cent. One thing to be noted in this connection is the marked advance that has taken place recently in the price of rice, and hence of the capitalized value of land on which the tax is based, the present price being about threefold that prevailing on the occasion of the last assessment. Therefore even at the rate of 3.3 per cent. it practically amounts to only 1 per cent., when considered in connection with that advance.

Land Tax.

The Income Tax was at the same time advanced by 1 to 5½ per cent but the creation of the Business Tax in 1896 was a far more important measure. This tax being extremely complicated in its assessment, all that can be stated within the limited space at our disposal is that the tax is imposed according to the proceeds realized from the sales of commodities, the amount of the rental of the buildings, of capital invested, the number of persons employed, etc. The tax is one of special importance in view of its relation to franchise, for a man who pays this tax above a certain limit is entitled to exercise this important right. The relation between the exercise of legislative functions, and the Business Tax has developed a new feature in the history of the national legislature, as it has led to the admission (as the Land Tax did in the case of agriculturists from the first) of the business classes to the exercise of this important privilege, and therefore to establish some balance between agriculturists and business people in the privilege of national representation.

Income and Business Taxes.

The inauguration of the tobacco monopoly measure by discontinuing the former stamp duty on tobacco was another special financial

Tobacco Monopoly. feature incidental to the post-bellum programme. The monopoly originated from the idea of increasing the revenue from this source and of doing away with the complicated stamp duty and the license duty.

The post-bellum programme has not confined itself, in regard to taxation, to creating new taxes or increasing the rate of the old, for it has at the same time abolished some of the existing taxes and has generally simplified taxation.

The existing taxes, besides those already enumerated, comprise exercise on sugar, soy tax, tax on the issue of convertible notes, tax on bourses, tax on mining, tonnage dues, tax on

Other Taxes. patent medicines, regisration tax, stamp duties, etc. Then there are proceeds from such Government undertakings as railroads and post and telegraph services, and the proceeds from this sources are steadily increacing.

Customs duties were at first insignificant, for with the tariff fixed, under the then existing treaty, at 5 per cent. *ad valorem*, and with foreign trade remaining inactive, the receipts realized

Customs Duties. did not for several years exceed 3 million *yen*. The development of the trade was naturally attended by a great increase in the amounts of custom receipts, and in 1898 the recipts, even under the old 5 per cent. rate, amounted to about 9 million *yen*. With the revision of the treaty in the following year, tariff autonomy was partially restored. At the same time export duties were entirely abolished, and the tariff was confined to imports alone. The tariff rate, according to the new arrangement, ranges from 5 to 35 per cent. *ad valorem*, and the enforcement of this new system was at once followed by a marked increase in the receipts. In the 1899 fiscal year, for instanee, it amounted to about 16 million *yen*, and excepting the 13,600,000 *yen* in the 1901 fiscal year, that of the other three last years exceeded 16,500,000 *yen*, so that this source now constitutes an important item in our national revenue.

Even from the brief survey given above of the development of our taxation system, it will be seen how our financial system is growing more and more sound with the development of the national economy. At the beginning of the era, the Land Tax was pratically the sole resource of revenue for the Government, while to-day the

list contains a large number of taxes some of which even yield a larger revenue than that primary tax.

Financial Administration.—The reason why the taxation system has been here described at some length arises from our desire to show the soundness of our finance and also because the financial system must occupy a place of special importance in any explanation of the national condition of the new Japan. For other aspects of our finances only a short notice will therefore be given. A brief description of the history of the management of the finances will not however be out of place here. As might have been expected, the financial system was extremely complicated in the beginning of the era, and no regular method existed with regard to financial administration. Each Department of the State was financially independent, and there was no unity in the State finances. On the enforcement in 1871 of the first local administration system, it was arranged that all financial matters should be controlled by the Treasury, while, coming to 1873, a regular procedure was adopted for receipts and payment, and this was a forerunner of the present Budget system. In 1880 the Board of Audit was created and placed under the direct control of the Emperor. Considerable difficulty was experienced in bringing financial administration under the control of the Treasury and the auditing business under that of the Board of Audit, for each Department of the State had been used to separately look after its own money matters, while no definite system had existed in regard to the finances of the State. It was therefore feared that an attempt to unify financial affairs might not be beneficial in its result. Experience has, however, entirely falsified this prediction, and the new arrangement has proved as efficient as it has been beneficial. The year 1882 was indeed a memorable one in the history of Japanese finances, for from that year the sole control by the Treasury of the right of receiving or paying Government money was obtained; and all irregularities that had previously attended this important branch of State affairs were entirely removed. In this year too the Bank of Japan was created, and was made to act as cashier for the Government. To mention other important financial measures, the budgets and settled accounts were made public every year from 1886, while on the occasion of the promulgation of the Imperial

Constitution in 1889, the Law of Finance was amended, and our financial system first assumed the form it presents to-day. The Budgets, as provided in the Constitution, are compiled by the Minister of Finance and carried into effect by him with the approval of the Diet. The settled Accounts are introduced to the Diet also after having been audited by the Board of Audit.

Finance and the Imperial Diet.—On the advent of the Constitutional régime, a new epoch was inaugurated in financial affairs, so that while previously those affairs were arranged at the discretion of the Government alone, the approval of the Diet is now required for them. The compilation of budgets and the reporting of settled accounts are of course no novel process in the West, but its adoption by Japan is a significant sign proving how Japan has energetically striven to regulate her finances according to the enlightened system of the West.

Statistical Tables.—Before proceeding to treat other subjects about finances, statistics relating to State expenditures and revenue, proceeds from different items of revenue, and other affairs shall be given first:—

TABLE I.—ANNUAL STATE REVENUE AND EXPENDITURE PERTAINING TO THE GENERAL ACCOUNT.

(unit of *yen*).

Revenue.

Fiscal Year.	Ordinary.	Extraordinary.	Total.
1868 (*a*)	3,664,780	29,424,533	33,089,313
1869 (*b*)	4,666,056	29,772,349	34,438,405
1870 (*c*)	10,043,628	10,915,872	20,959,500
1871 (*d*)	15,340,922	6,803,676	22,144,598
1872 (*e*)	24,422,742	26,022,431	50,445,173
1873 (*f*)	70,561,688	14,945,557	85,507,245
1874 („)	71,090,481	2,355,063	73,445,544
1875 (*g*)	83,080,575	3,240,502	86,321,077
1875	63,786,587	5,696,090	69,482,677
1876	55,684,997	3,796,039	59,481,036
1877	49,967,723	2,370,410	52,388,133
1878	53,558,117	8,885,632	62,443,749

REVENUE.

Fiscal Year.	Ordinary.	Extraordinary.	Total.
1879	57,716,322	4,435,428	62,151,751
1880	58,036,574	5,330,681	63,367,255
1881	64,304,512	7,185,368	71,489,880
1882	69,888,873	3,619,554	73,508,427
1883	76,425,687	6,681,171	83,106,858
1884	72,102,109	4,567,464	76,669,654
1885 (*h*)	56,429,622	57,272,213	62,156,835
1886	71,094,268	14,231,876	85,326,144
1887	76,068,094	12,092,980	88,161,074
1888	74,253,414	18,703,519	92,956,933
1889	82,355,442	14,332,537	96,687,979
1890	78,593,498	27,875,856	106,459,354
1891	76,264,852	26,966,636	103,231 488
1892	80,728,018	20,733,893	101,461,911
1893	85,883,080	27,886,300	113,769,380
1894	89,748,454	8,421,574	98,170,028
1895	95,444,652	22,988,069	118,432,721
1896	104,904,501	82,114,922	187,019,423
1897	124,222,964	102,167,159	226,390,123
1898	132,869,336	87,184,792	220,054,128
1899	177,328,528	76,925,996	254,254,524
1900	192,170,080	103,684,787	295,854,867
1901	202,035,071	72,323,950	274,359,021
1902	226,114,613	56,318,351	282,432,964
1903	231,802,499	19,879,462	251,681,961

Fiscal Year.	Expenditure.			Surplus or Deficit.
	Ordinary.	Extraordinary.	Total.	
1868 (*a*)	5,506,253	24,998,833	30,505,086	2,584,227
1869 (*b*)	9,360,231	11,425,609	20,785,840	13,652,565
1870 (*c*)	9,750,003	10,357,669	20,107,672	851,828
1871 (*d*)	12,226,382	7,008,776	19,235,158	2,909,440
1872 (*e*)	42,474,919	15,255,106	57,730,025	*7,284,852
1873 (*f*)	50,639,552	12,039,048	62,678,600	22,828,645
1874 („)	60,001,916	22,267,612	82,269,528	*8,823,984
1875 (*g*)	52,842,348	13,292,424	66,134,772	20,186,305
1875	56,613,037	12,590,205	69,203,242	279,435
1876	56,815,326	2,493,631	59,308,957	172,079
1877	45,344,216	3,084,109	48,428,325	3,909,808
1878	55,988,710	4,954,626	60,941,336	1,502,413

Fiscal Year.	Expenditure.			Surplus or Deficit.
	Ordinary.	Extraordinary.	Total.	
1879	55,205,539	5,112,040	60,317,579	1,834,142
1880	60,297,322	2,843,574	63,140,896	226,359
1881	60,413,710	11,046,611	71,460,321	29,559
1882	59,750,727	13,729,940	73,480,967	27,760
1883	67,914,176	15,192,682	83,106,858	0
1884	60,724,554	15,938,554	76,663,108	6,546
1885 (*h*)	47,643,037	13,472,277	61,115,314	1,041,521
1886	67,613,793	15,610,167	83,223,960	2,102,184
1887	66,042,669	13,410,367	79,453,036	8,708,038
1888	66,439,716	15,064,308	81,504,024	11,452,909
1889	63,785,569	15,928,103	79,713,672	16,974,307
1890	66,752,431	15,372,972	82,125,403	24,343,951
1891	62,936,312	20,619,579	83,555,891	19,675,597
1892	63,818,030	12,916,710	76,734,740	24,727,171
1893	64,545,499	20,036,273	84,581,872	29,187,508
1894	60,421,346	17,707,297	78,128,643	20,041,385
1895	67,148,007	18,169,173	85,317,180	33,115,541
1896	100,712,816	68,143,692	168,856,508	18,162,915
1897	107,695,127	115,983,717	223,678,844	2,711,279
1898	119,072,144	100,685,424	219,757,568	296,560
1899	137,590,418	116,575,120	254,165,538	88,986
1900	149,134,167	143,615,893	292,750,060	3,104,807
1901	160,363,583	106,493,241	266,856,824	7,502,197
1902	177,596,966	104,156,229	281,753,195	679,769
1903	178,464,121	66,288,225	244,752,346	6,929,615

Note :—The length of term of fiscal years given in this and the following four tables is not uniform; (*a*) comprises 13 months ending December 31st of 1868; (*b*) 9 months ending September 30th, 1869; (*c*) 12 months ending September 30th, 1870; (*d*) 13 months ending October 31st, 1871; (*e*) 14 months ending December 31st, 1872; (*f*) 12 months ending December 31st, of the respective years; (*g*) 6 months ending June 30th, 1875. The rest comprise 12 months each, 1875 and 1884 fiscal years ending on June 30th and the others on March 31st, of the respective following years.

The figures for 1868 to 1900 fiscal years represent settled accounts; those for 1901, actual accounts as they stood on November of following year, and lastly those for 1902 and 1903 estimates on the budget.

The figures marked by an asterisk (*) denote deficit.

TABLE II.—SOURCES OF THE ANNUAL STATE REVENUE PERTAINING TO THE GENERAL ACCOUNT.

(unit of *yen*).

ORDINARY REVENUE.

Fiscal Year.	Taxes.	Stamp Receipts.	Receipts from Public Undertakings and State Property.	Transferred for the Payment of Interest on Deposits.
1868	3,265,483	—	101,856	—
1869	4,431,332	—	127,708	—
1870	9,634,864	—	193,761	—
1871	14,270,058	—	327,471	—
1872	22,566,525	—	229,375	—
1873	64,537,656	354,478	2,376,256	—
1874	64,836,528	332,650	2,601,703	—
1875	75,808,346	412,445	3,550,504	—
1875	57,764,039	700,751	5,175,820	—
1876	50,250,312	670,944	4,643,593	—
1877	46,231,261	761,725	2,854,395	—
1878	49,740,694	666,949	3,021,107	—
1879	53,462,901	784,918	3,304,588	—
1880	52,692,914	962,701	4,197,878	—
1881	58,813,403	1,002,333	4,288,261	—
1882	64,893,531	1,039,710	3,763,322	—
1883	64,223,783	975,636	4,335,841	—
1884	63,799,177	1 078,963	4,812,012	—
1885	50,116,710	709,701	4,287,510	—
1886	63,356,863	922,594	5,304,752	—
1887	65,279,634	878,235	6,126,533	—
1888	63,324,078	1,305,264	6,841,354	—
1889	70,506,158	622,127	7,677,951	—
1890	65,363,608	580,763	8,733,420	994,497
1891	63,660,190	588,099	8,285,177	634,229
1892	66,415,217	659,999	9,585,488	632,513
1893	69,166,393	761,531	11,602,974	913,214
1894	70,417,709	793,437	13,957,192	1,036,609
1895	73,567,908	900,980	15,767,916	1,018,057
1896	75,042,271	6,493,055	17,555,922	1,548,193
1897	93,700,752	7,182,667	19,491,926	1,535,679
1898	96,187,335	7.605,170	25,410,159	1,099,000
1899	126,034,543	11,942,825	34,742,006	2,024,281
1900	133,926,095	12,289,237	40,073,716	2,381,896
1901	139,530,008	12,274,702	44,304,617	2,319,314
1902	153,430,541	14,304,951	51,821,303	3,309,805
1903	158,488,644	13,532,121	52,739,522	3,309,805

Fiscal Year.	Fund Transferred for Redemption of Formosan Public Works Loan.	Education Fund Transferred.	Other Funds Transferred.	Miscellaneous Receipts.	Total.
1868	—	—	—	297,441	3,664,780
1869	—	—	—	107,016	4,666,056
1870	—	—	—	214,998	10,043,628
1871	—	—	—	743,393	15,340,922
1872	—	—	—	1,626,842	24,422,742
1873	—	—	—	3,293,298	70,561,688
1874	—	—	—	3,319,600	71,090,481
1875	—	—	—	3,309,280	83,080,575
1875	—	—	—	145,977	63,786,587
1876	—	—	—	120,148	55,684,997
1877	—	—	—	120,342	49,967,723
1878	—	—	—	129,367	53,558,117
1879	—	—	—	163,916	57,716,323
1880	—	—	—	183,081	58,036,574
1881	—	—	—	200,512	64,304,512
1882	—	—	—	192,310	69,888,873
1883	—	—	6,658,303	232,124	76,425,687
1884	—	—	2,190,926	221,107	72,102,190
1885	—	—	1,113,155	202,546	56,429,622
1886	—	—	—	1,510,059	71,094,268
1887	—	—	—	3,783,962	76,068,094
1888	—	—	—	2,782,718	74,253,414
1889	—	—	—	3,549,206	82,355,442
1890	—	—	—	2,921,210	78,593,498
1891	—	—	—	3,097,157	76,264,852
1892	—	—	—	3,134,801	80,728,018
1893	—	—	—	3,435,968	85,883,080
1894	—	—	—	3,543,507	89,748,454
1895	—	—	—	4,139,791	65,444,952
1896	—	—	2,711,823	1,553,237	104,904,501
1897	—	—	—	2,311,940	124,222,964
1898	—	—	—	2,567,672	132,866,336
1899	23,333	—	—	2,561,539	177,328,527
1900	338,939	623,611	—	2,536,594	192,170,081
1901	563,768	541,752	—	2,223,280	202,035,071
1902	1,000,303	500,000	—	1,747,710	226,114,613
1903	1,350,000	500,000	—	1,882,407	231,802,499

EXTRAORDINARY REVENUE.

Fiscal Year.	Amount of Paper Money Issued.	Proceeds from Public Loans.	Temporary Loans.	Chinese Indemnity Transferred.	Forestry Funds Transferred.	Surplus of the Previous year Transferred.
1868... ...	24,037,390	—	4,732,482	—	—	—
1869... ...	23,962,160	—	911,500	—	—	—
1870... ...	5,354,513	4,782,400	—	—	—	—
1871... ...	2,145,488	—	—	—	—	—
1872... ...	17,825,444	—	—	—	—	—
1873... ...	—	10,833,600	—	—	—	—
1874... ...	—	—	—	—	—	—
1875... ...	—	—	—	—	—	—
1875... ...	—	—	—	—	—	—
1876... ...	—	—	—	—	—	—
1877... ...	—	—	—	—	—	—
1878... ...	—	—	—	—	—	—
1879... ...	—	—	—	—	—	—
1880... ...	—	—	—	—	—	—
1881... ...	—	—	—	—	—	—
1882... ...	—	—	—	—	—	—
1883... ...	—	—	—	—	—	—
1884... ...	—	—	2,000,000	—	—	—
1885... ...	—	—	3,066,205	—	—	—
1886... ...	—	5,187,832	4,000,000	—	—	1,041,522
1887... ...	—	6,048,725	—	—	—	2,102,184
1888... ...	—	3,821,045	—	—	—	3,198,178
1889... ...	—	4,003,396	—	—	—	4,348,975
1890... ...	—	—	—	—	353,223	20,598,721
1891... ...	—	—	—	—	—	24,343,951
1892... ...	—	—	—	—	—	19,675,598
1893... ...	—	—	—	—	—	24,727,171
1894... ...	—	—	—	—	—	5,748,423
1895... ...	—	—	—	—	—	20,041,385
1896... ...	—	2,976,600	—	11,798,389	—	33,115,541
1897... ...	—	36,389,874	—	40,360,796	—	18,162,915
1898... ...	—	35,352,806	—	46,187,071	—	2,711,279
1899... ...	—	36,166,404	3,200,000	32,636,905	347,337	296,558
1900... ...	—	38,139,599	*5,500,000	31,240,140	868,207	88,987
1901... ...	—	31,721,764	11,000,000	20,883,428	1,141,042	3,104,809
1902... ...	—	4,740,000	2,000,000	8,065,856	2,145,904	761,011
1903... ...	—	4,740,000	2,687,683	3,574,717	2,145,904	224,610

Fiscal Year.	Extraordinary Revenue.					Grand Total.
	Other Funds Transferred.	Local Contributions to Expenses Incurred by the State for the Benefit of Certain Prefectures.	Proceeds from State Property Sold.	Other Miscellaneous Receipts.	Total.	
1868.....	—	—	—	654,661	29,424,533	33,089,313
1869.....	—	—	—	4,898,239	29,772,349	34,438,405
1870.....	—	—	—	778,959	10,915,872	20,959,500
1871.....	—	—	—	4,658,188	6,803,676	22,144,598
1872.....	—	—	—	8,196,987	26,022,431	50,445,173
1873.....	—	—	—	4,111,957	14,945,557	85,507,245
1874.....	—	—	—	2,355,063	2,355,063	73,445,544
1875.....	—	—	—	3,240,502	3,240,502	86,321,077
1875.....	—	—	2,418,362	3.277,728	5,696,090	69,482,677
1876	—	—	849,252	2,946,786	3,796,039	59,481,036
1877.....	—	—	685,305	1,685,105	2,370,410	52,338,133
1878.....	—	—	776,288	8,109,344	8,885,632	62,443,749
1879.....	—	—	619,047	3,816,381	4,435,428	62,151,751
1880.....	—	—	1,183,427	4,147,254	5,330,681	63 367,255
1881.....	—	—	737,427	6,447.941	7,185,368	71,489,368
1882.....	—	—	545,737	3,073,817	3,619,554	73,508,457
1883.....	3,995,256	—	928,476	1,757,439	6,681,171	83,106 858
1884.....	182,379	—	814,622	1,574,463	4,567,464	76,669,654
1885.....	1,262,884	—	394,194	1,003,930	5,727,213	62,156,835
1886.....	1,354,698	—	1,087,763	1,560,061	14,231,876	85,326,144
1887.....	767,292	—	727,510	2,447,269	12 092,980	88,161,074
1888.....	7,831,811	—	1,858.383	1.994 102	18,703,519	92,956,933
1889.....	1,581,433	—	2,266,247	2,132,486	14,332,537	96,687,979
1890.....	5.520,725	—	726,187	677,000	27,875,856	106,469,354
1891.....	1,588 053	—	610,454	424,178	26,966,636	103,231,488
1892.....	239 670	—	627,885	190,740	20.733,893	101,461,911
1893.....	468,524	—	678,968	2 011,637	27,886,300	113,769,380
1894.....	145.252	—	655,683	1,872,216	8,421.574	98,170,028
1895.....	155,557	—	645,356	2,145,771	22,988,069	118,432,721
1896.....	29,594,817	324 400	1,110,965	3 203,210	82 114,922	187,019,423
1897.....	1,233 705	398,200	922,500	4,699,169	102,167,159	226,390,123
1898.....	844,699	664,859	800,942	623,136	87,184,792	220,054,128
1899.....	3,401,104	637,282	827,957	412,449	76,925.996	254.254,523
1900.....	20,000,000	1,246,975	931,288	5,669,591	103,684,787	295,854,868
1901.....	—	1,060,655	1,254,632	2,157 620	72,323,950	274,359,051
1902.....	—	1,197,141	1,111,125	36,297,314	156,318,351	282,432,964
1903.....	—	1,076,800	894,375	4,535,373	19 879,462	251,681,961

Note.—For the 1893 fiscal year some of the items belonging to stamp receipts were included, according to their nature, to various headings, instead of being treated according to the ordinary mode of classifying settled accounts. Hence the figures for the same period as given in this table may not agree with those given in other statistical publications.

The figures marked with an asterix (*) include temporary loans incurred on account of the Boxer trouble.

TABLE III.—ANNUAL AMOUNT OF TAXES FROM VARIOUS SOURCES.

(unit of *yen*).

TAXES IN FORCE.

Fiscal Year.	Land Tax.	Business Tax.	Income Tax.	*Sake* Tax.	Sugar Excise.	Soy Tax.
1868.....	2,009,014	—	—	—	—	—
1869.....	3,355,964	—	—	—	—	—
1870.....	8,218,969	—	—	—	—	—
1871.....	11,340,984	—	—	—	—	—
1872.....	20,051,917	—	—	16,208	—	—
1873.....	60,604,242	—	—	961,031	—	—
1874.....	59,412,429	—	—	1,683,530	—	—
1875.....	67,717,947	—	—	1,310,381	—	—
1875.....	50,345,328	—	—	2,555,595	—	—
1876.....	43,023,426	—	—	1,911,639	—	—
1877.....	39,450,551	—	—	3,050,318	—	—
1878.....	40,454,714	—	—	5,100,063	—	—
1879.....	42,112,648	—	—	6,463,894	—	—
1880.....	42,346,181	—	—	5,511,335	—	—
1881.....	43,274,032	—	—	10,646,163	—	—
1882.....	43,342,188	—	—	16,329,624	—	—
1883.....	43,537,649	—	—	13,490,730	—	—
1884.....	43,425,996	—	—	14,068,133	—	—
1885.....	43,033,679	—	—	1,053,465	—	640,179
1886.....	43,282,477	—	—	11,743,778	—	1,188,413
1887.....	42,152,171	—	527,724	13,069,808	—	1,252,721
1888.....	34,650,528	—	1,066,895	17,063,801	—	1,350,986
1889.....	42,161,328	—	1,052,982	16,439,720	—	1,288,078
1890.....	40,084,496	—	1,092,378	13,912,126	—	1,210,575
1891.....	37,457,500	—	1,110,554	14,686,920	—	1,254,106
1892.....	37,925,243	—	1,132,359	15,812,888	—	1,278,011
1893.....	38,808,680	—	1,238,763	16,637,436	—	1,332,793
1894.....	39,291,495	—	1,353,518	16,130,471	—	1,382,879
1895.....	38,692,868	—	1,497,095	17,748,735	—	1,463,073
1896.....	37,640,283	52	1,810,221	19,476,512	—	1,534,022
1897.....	37,964,727	4,416,249	2,095,092	31,105,172	—	1,532,101
1898.....	38,440,976	5,478,020	2,351,420	32,959,857	—	1,535,543
1899.....	44,861,082	5,507,147	4,837,320	48,918,423	—	2,453,392
1900.....	46,717,797	6,051,515	6,368,039	50,293,951	—	3,153,890
1901.....	46,666,494	6,481,045	6,836,890	58,017,368	612,344	3,464,023
1902.....	46,845,971	6,604,003	6,109,809	63,805,207	6,077,005	3,328,499
1903.....	46,996,212	6,792,818	7,412,801	66 535,404	7,184,637	3,444,034

Fiscal Year.	Tax on Convertible Bank Notes.	Tax on Bourses.	Mining Tax.	Tonnage Dues.	Tax on *Sake* Exported from Okinawa Prefecture.	Duties on Patent Medicine.	Customs Duties.
1868.....	—	—	—	—	—	—	720,867
1869.....	—	—	—	—	—	—	502,817
1870.....	—	—	—	—	—	—	648,453
1871.....	—	—	—	—	—	—	1,071,631
1872.....	—	—	—	—	—	—	1,331,560
1873.....	—	—	—	—	—	—	1,685,975
1874.....	—	—	—	—	—	—	1,498,258
1875.....	—	—	44,492	—	—	—	1,038,104
1875.....	—	—	7,431	—	—	—	1,718,733
1876.....	—	—	8,903	—	—	28,455	1,988,668
1877.....	—	—	9,339	—	—	87,089	2,358,654
1878.....	—	—	10,610	—	—	74,219	2,351,635
1879.....	—	—	12,073	—	—	78,770	2,691,205
1880.....	—	—	12,990	—	—	86,041	2,624,177
1881.....	—	—	26,631	—	—	84,246	2,569,666
1882.....	—	—	18,806	—	—	364,942	2,613,291
1883.....	—	—	14,816	—	—	495,441	2,681,321
1884.....	—	—	13,501	—	—	363,589	2,750,165
1885.....	—	—	18,346	—	—	282,127	2,085,250
1886.....	—	269,111	21,447	—	—	438,658	2 989,686
1887.....	—	189,762	29,176	—	—	424,033	4,135,652
1888.....	—	173,048	46,738	—	2,110	451,714	4,615,494
1889.....	—	219,391	95,579	—	11,093	485,155	4,728,023
1890.....	1,986	254,162	* —	—	14,900	498,976	4,392,566
1891.....	—	230,355	* —	—	14,814	517,940	4,539,687
1892.....	—	223,812	134,033	—	12,380	589,219	4,991,524
1893.....	—	350,969	178,869	—	17,834	636,433	5,125,372
1894.....	6,969	587,691	241,418	—	25,186	670,133	5,755,456
1395.....	408,662	780,311	247,061	—	19,848	778,613	6,785,640
1896.....	926,240	1,001,173	335,502	—	35,199	881,604	6,728,323
1897.....	560,975	1,106,208	421,381	—	56,831	982,381	8,020,513
1898.....	1,251,610	856,036	567,992	—	72,616	1,061,438	9,092,592
1899.....	846,582	1,177,040	605,948	240,323	81,572	113,525	15,936,890
1900.....	1,404,794	1,228,461	624,248	336,352	156,834	117,799	17,009,815
1901.....	1,693,599	836,397	727,722	361,098	117,496	121,954	13,630,815
1902.....	1,145,416	1,087,180	774,091	330,353	154,420	116,976	17,045,611
1903.....	1,149,616	1,030,605	759,578	348,726	144,148	119,410	16,570,655

Fiscal Year.	Items that have been abolished.						Total.
	Fishery Dues in Hokkaidō.	Tobacco Tax.	Confectionery Tax.	Tax on Vehicles.	Tax on Vessels.	Other Miscellaneous Taxes.	
1868.....	—	—	—	—	—	535,602	3,265,483
1869.....	—	—	—	—	—	572,551	4,431,332
1870.....	—	—	—	—	—	767,442	9,634 864
1871.....	—	—	—	—	—	1,857,443	14,270,058
1872.....	—	—	—	—	7,803	1,159,037	22,566,525
1873.....	—	—	—	—	83,123	1,203,285	64,537,656
1874.....	—	—	—	—	125,677	2,116,634	64,836,528
1875.....	—	—	—	96,578	12,336	5,588,508	75,808,346
1875.....	342,526	206,748	—	213,193	128,515	2,245,970	57,764,039
1876.....	348,584	244,149	—	234,902	133,119	2,292,467	50,250,312
1877.....	361,121	227,080	—	261,859	194,738	230,512	46,231 261
1878.....	509,595	274,533	—	289,134	133,589	542,602	49.740,694
1879.....	813,416	269,575	—	335,940	134,658	550,722	53,462,901
1880.....	899,087	292,881	—	379,486	135,289	405,447	52,692,914
1881.....	817,837	276,332	—	428,211	133,418	556,867	58.813,403
1882.....	864,712	280,849	—	453,869	135 219	490,031	64,893 531
1883.....	559,195	2,154,211	—	462,088	218,040	610,292	64,223,783
1884.....	501,443	1,294 316	—	478,512	230,453	673,069	63,799,177
1885.....	554,778	905,187	437,893	484,029	238,334	383,543	50,116,710
1886.....	611.400	1,235,814	544,901	531,103	250,469	249,606	63,356,863
1887.....	220,273	1,590.752	595,738	577,390	258,945	255 219	65,279,364
1888.....	218,776	1,907 343	628,323	611,366	270 468	257 488	63,324,078
1889.....	215,101	1,981,540	647,033	648,096	280.330	252,709	70,506,158
1890.....	223,406	1,814,033	662,647	664,229	282,530	254,625	65,363 608
1891.....	219,086	1,798,137	614,192	680,812	278,373	255,714	63,660,190
1892.....	303,656	2,161,655	587 001	729 634	276,915	256,887	66,415,217
1893.....	303 769	2,640,351	593,809	773,948	275,701	254,666	69,169,393
1894.....	301,925	2,680,468	637,626	811,032	281,525	259,920	70,417,709
1895.....	301,344	2,740,774	689,133	861,951	291,350	261,450	73,564,908
1896.....	301,522	2,977,630	546,136	469,491	152,087	226,326	75,042,271
1897.....	359,289	4,935,173	—	—	9	147,651	93,700,752
1898.....	353,188	2,120,555	—	—	11	45,481	96,187,335
1899.....	357,611	—	—	—	—	97 688	126 034,543
1900.....	367,962	—	—	—	—	94,938	133,926,095
1901.....	—	—	—	—	—	7,661	139,574,809
1902.....	—	—	—	—	—	—	153 430,541
1903.....	—	—	—	—	—	—	158,488,644

TABLE IV.—RECEIPTS FROM PUBLIC UNDERTAKINGS AND STATE PROPERTY.

(unit of *yen*).

Fiscal Year.	Post and Telegraph.	Forests.	State Property.	Profit from Tobacco Monopoly.	Railroads.
1868...	—	—	101,856	—	—
1869...	—	—	94,184	—	—
1870...	—	—	155,917	—	—
1871...	1,238	—	166,532	—	—
1872...	18,334	—	48,246	—	—
1873...	138,302	—	160,804	—	544,233
1874...	282,227	—	106,093	—	468,247
1875...	705,351	—	243,159	—	542,337
1875...	748,938	—	1,268,337	—	642,204
1876...	920,585	94,503	157,826	—	808,883
1877...	809,856	62,789	229,203	—	384,088
1878...	968,266	178,356	248,077	—	456,622
1879...	1,307,028	61,054	247,239	—	698,784
1880...	1,638,421	411,266	258,557	—	888,561
1881...	1,923,308	282,258	199,629	—	1,127,479
1882...	1,703,527	176,002	146,334	—	913,846
1883...	2,346,945	311,160	176,569	—	933,778
1884...	2,209,856	300,933	218,820	—	750,539
1885...	1,601,188	240,697	149,862	—	453,890
1886...	3,009,974	456,218	264,105	—	678,124
1887...	3,400,859	633,514	257,251	—	1,021,749
1888...	3,272,067	899,798	215,059	—	1,346,226
1889...	3,859,232	648,255	735,188	—	1,434,953
1890...	4,637,987	732,580	206,969	—	1,722,102
1891...	5,049,360	744,366	241,642	—	1,419,611
1892...	5,518,913	872,481	223,257	—	2,085,068
1893...	6,487,688	1,060,913	221,936	—	2,709,760
1894...	8,381,049	844,300	220,884	—	3,176,707
1895...	9,553,879	1,134,853	217,664	—	3,602,594
1896...	10,406,083	1,286,614	413,924	—	3,970,999
1897...	12,204,012	1,577,114	232,618	292,142	4,558,565
1898...	13,603,285	1,625,632	205,805	5,145,999	4,278,547
1899...	17,424,951	1,930,218	222,934	7,559,534	6,901,653
1900...	20,699,331	2,271,020	209,175	7,244,159	8,090,066
1901...	20,934,987	2,347,914	244,710	10,866,700	7,706,161
1902...	25,856,730	2,914,387	223,706	11,728,526	8,817,510
1903...	25,915,940	2,955,361	229,908	12,606,012	8,785,089

Fiscal Year.	Mint Profit.	Mining Profit.	Other Profit.	Miscellaneous Receipts.	Total.
1868...	—	—	—	—	101,856
1869...	—	—	—	33,524	127,708
1870...	—	—	—	37,849	193,766
1871...	—	—	—	159,701	327,471
1872...	—	38,895	—	123,900	229,375
1873...	1,095,594	154,845	—	281,478	2,376,256
1874...	1,024,517	316,122	—	404,497	2,601,703
1875...	253,081	869,389	—	937,187	3,550,504
1875...	1,450,036	799,949	—	266,356	5,175,820
1876...	1,152,037	827,221	—	682,538	4,643,593
1877...	834,285	251,202	—	282,972	2,854,395
1878...	910,496	102,350	—	156,940	3,021,107
1879...	505,628	237,945	—	246,910	3,304,588
1880...	487,410	397,728	—	115,935	4,197,878
1881...	385,233	308,729	—	61,627	4,288,264
1882...	462,607	289,321	—	71,685	3,763,322
1883...	398,155	100,087	—	69,147	4,335,831
1884...	376,065	233,131	—	722,668	4,812,012
1885...	1,459,102	178,922	—	203,849	4,287,510
1886...	88,469	271,689	302,734	233,439	5,304,752
1887...	241,383	155,703	254,906	161,168	6,126,533
1888...	200,712	490,142	243,509	173,841	6,841,354
1889...	524,062	27,514	104,916	343,831	7,677,951
1890...	681,595	15,046	424,288	312,853	8,733,420
1891...	296,590	—	207,405	326,203	8,265,177
1892...	295,481	—	272,466	317,822	9,585,488
1893...	494,461	—	252,185	376,031	11,602,974
1894...	637,423	—	265,314	431,515	13,957,192
1895...	429,869	—	416,196	415,861	15,767,916
1896...	772,588	506	294,201	411,007	17,555,922
1897...	—	—	240,249	387,226	19,491,926
1898...	—	—	183,640	367,251	25,410,159
1899...	—	—	274,682	428,028	34,742,006
1900...	—	—	571,567	988,389	40,073,712
1901...	—	—	521,100	1,706,235	44,327,807
1902...	—	—	171,961	2,108,483	51,821,303
1903...	—	—	213,380	2,033,831	52,739,522

Note:—As the mining tax for 1890 and 1891 could not be distinguished from other license fees among which it was counted in, it was included with other license fees under the heading of "Other miscellaneous taxes."

TABLE V.—ANNUAL APPLICATION OF THE STATE EXPENDITURE PERTAINING TO THE GENERAL ACCOUNTS, THE CIVIL LIST AND THE DEPARTMENTS OF THE STATE.

(unit of *yen*).

Fiscal Year.	Ordinary.					
	Civil List.	Foreign Affairs.	Home Affairs.	Finance.	Army.	Navy.
1868... ...	249,595	111,671	2,818	3,639,462	1,059,798	
1869... ...	384,955	151,949	15,291	7,109,653	1,547,966	
1870... ...	554,232	46,626	5,683	7,475,142	1,500,174	
1871... ...	513,801	83,532	9,808	8,037,979	3,252,966	
1872... ...	912,754	349,229	132,796	29,765,330	7,699,347	1,869,044
1873... ...	678,204	699,342	72,752	36,855,985	8,497,755	1,190,313
1874... ...	775,035	711,105	11,593,167	31,917,093	8,733,176	1,685,237
1875... ...	443,837	146,299	7,445,247	31,083,656	7,262,599	3,522,300
1875... ...	933,211	644,942	11,345,277	24,851,556	6,959,736	2,825,843
1876... ...	1,118,137	535,044	10,917,655	24,950,982	6,904,829	3,424,998
1877... ...	1,249,286	518,287	10,838,161	18,697,931	6,035,940	3,167,512
1878... ...	1,266,382	576,818	10,887,076	29,166,518	6,409,005	2,804,021
1879... ...	1,342,889	804,748	11,574,341	25,446,073	7,766,916	3,079,859
1880	1,393,559	1,138,638	12,965,636	26,370,598	8,434,530	3,165,222
1881	1,909,893	675,534	8,679,471	31,549,850	8,208,609	3,014,758
1882	2,184,354	726,105	8,212,196	29,130,919	8,588,117	3,160,492
1883... ...	2,363,651	748,285	9,998,442	33,320,368	10,250,424	3,080,634
1884... ...	2,327,101	785,299	9,224,383	25,584,429	10,618,712	3,193,300
1885... ...	1,797,246	608,247	8,929,943	18,985,172	9,606,237	2,634,658
1886... ...	2,449,835	787,782	9,742,410	30,596,845	11,464,226	4,699,511
1887... ...	2,500,000	750,580	9,688,532	28,149,249	11,805,903	4,941,524
1888... ...	2,690,888	749,472	9,475,916	28,129,164	11,786,416	5,468,552
1889... ...	3,000,000	728,791	9,125,552	25,116,713	12,206,362	5,277,332
1890... ...	3,000,000	742,051	7,671,272	27,238,063	12,437,989	5,786,381
1891... ...	3,000,000	704,115	7,795,789	23,540,822	12,656,741	5,412,491
1892... ...	3,000,000	671,437	7,770,597	24,213,245	12,498,235	5,347,186
1893... ...	3,000,000	623,982	7,662,106	24,915,268	12,419,829	5,141,475
1894... ...	3,000,000	718,627	7,493,926	25,462,541	7,828,074	4,573,605
1895... ...	3,000,000	1,047,050	7,502,230	29,935,724	8,410,211	4,913,244
1896... ...	3,000,000	1,216,105	*13,858,033	38,393,881	22,613,590	7,351,330
1897... ...	3,000,000	1,445,849	8,262,075	39,173,414	28,746,263	9,543,889
1898... ...	3,000,000	1,641,557	9,621,053	38,734,238	32,562,072	11,191,475
1899... ...	3,000,000	1,929,427	10,762,427	47,001,622	35,577,310	14,577,114
1900... ...	3,000,000	2,425,724	10,954,703	47,297,090	36,123,892	16,911,000
1901... ...	3,000,000	2,153,243	9,899,403	51,566,742	37,433,911	19,484,953
1902... ...	3,000,000	2,284,270	10,583,417	62,142,664	38,432,317	21,349,054
1903... ...	3,000,000	2,284,160	10,627,469	61,870,627	38,495,727	22,077,695

Fiscal Year.	Justice.	Education.	Agriculture and Commerce.	Communi-cations.	Total.
1898	385,200	57,709	—	—	5,506,253
1869	46,936	103,481	—	—	9,360,231
1870	44,534	123,612	—	—	9,750,003
1871	61,533	114,965	—	121,798	12,226,382
1872	464,835	571,641	—	709,943	42,474,919
1873	767,383	1,303,536	—	574,282	50,639,552
1874	883,788	1,330,348	—	2,372,967	60,001,916
1875	259,365	869,741	—	1,809,304	52,842,348
1875	1,111,505	1,743,514	—	6,197,453	56,613,037
1876	1,385,459	1,695,311	—	5,882,911	56,815,326
1877	1,299,425	1,164,298	—	2,373,376	45,344,216
1878	1,214,936	1,138,653	—	2,523,301	55,986,710
1879	1,345,043	1,187,542	—	2,658,128	55,205,539
1880	1,779,823	1,177,198	281,098	3,591,020	60,297,322
1881	1,786,737	895,897	2,690,801	1,002,160	60,413,710
1882	2,070,556	935,035	3,337,770	1,405,183	59,750,727
1883	2,082,765	940,477	3,461,509	1,667,621	67,914,176
1884	2,267,106	961,690	3,461,116	2,301,508	60,724,554
1885	1,673,704	695,996	553,341	2,158,493	47,643,037
1886	2,549,701	976,846	933,872	3,412,765	67,613,793
1887	2,931,263	1,109,089	506,631	3,659,998	66,042,669
1888	2,976,148	1,031,228	541,463	3,590,469	66,439,716
1889	3,016,614	1,003,256	461,485	3,849,464	63,785,569
1890	3,510,863	1,054,697	876,169	4,434,946	66,752,431
1891	3,568,324	950,911	808,558	4,498,561	62,936,312
1892	3,500,936	790,674	947,003	4,898,717	63,818,030
1893	3,451,911	932,562	928,942	5,469,524	64,545,599
1894	3,387,609	923,384	862,344	6,171,236	60,421,346
1895	3,339,542	1,047,011	909,745	7,043,250	67,148,007
1896	3,452,933	1,422,389	1,142,498	8,262,057	100,712,816
1897	3,543,489	1,985,729	1,364,923	10,629,496	107,695,127
1898	3,825,687	2,336,691	1,644,371	14,515,000	119,072,144
1899	4,965,174	3,033,053	1,779,455	14,964,836	137,590,418
1900	7,803,152	4,456,708	2,209,883	17,952,015	149,134,167
1901	10,436,392	4,740,253	2,559,002	19,089,674	160,363,583
1902	10,837,646	4,845,708	2,948,913	21,172,977	177,596,966
1903	10,593,532	4,994,286	2,943,949	21,606,676	178,464,121

Note:—Of the expenditures for the years prior to 1885, those items which were not assigned to any departments are placed in this table under such departments as they might belong to by their nature.

* In the ordinary and extraordinary expenditures of Home Affairs for 1896 are included those of the Colonial Department which was created in that year and abolished in the next.

EXTRAORDINARY.

Fiscal Year.	Civil List.	Foreign Affairs.	Home Affairs.	Finance.
1868	—	—	—	21,446,022
1869	—	—	—	9,347,977
1870	—	—	—	9,753,835
1871	—	—	—	6,913,386
1872	—	—	—	14,550,147
1873	—	—	—	11,017,780
1874	—	—	3,790,972	14,238,009
1875	—	—	2,567,459	8,418,914
1875	—	—	232,687	12,357,518
1876	—	—	—	2,493,631
1877	—	—	436,917	2,124,016
1878	—	—	243,508	4,208,699
1879	—	—	272,419	3,722,778
1880	—	—	51,818	1,203,310
1881	—	—	347,710	9,059,817
1882	—	—	35,569	12,387,772
1883	—	—	42,853	10,181,141
1884	—	—	29,394	12,079,508
1885	—	—	22,385	10,082,788
1886	—	—	1,822,959	9,303,956
1887	—	—	2,325,918	5,480,542
1888	—	—	2,373,935	5,656,925
1889	—	80,000	4,365,531	3,563,510
1890	—	1,029	4,010,792	1,891,479
1891	—	2,375	10,458,597	2,820,509
1892	—	—	2,899,268	1,075,162
1893	—	19,265	11,465,283	1,185,170
1894	—	311,888	2,426,552	4,748,562
1895	—	300,987	3,668,978	2,051,804
1896	700,000	173,674	*15,690,603	2,579,837
1897	—	118,460	19,556,088	10,224,769
1898	—	125,185	13,055,539	6,143,094
1899	—	101,932	17,314,247	6,766,518
1900	—	309,907	15,386,964	6,408,930
1901	—	614,620	15,854,030	6,559,410
1902	—	92,724	17,065,028	41,550,611
1903	—	108,765	16,708,430	5,123,951

Fiscal Year.	War.	Navy.	Justice.	Education.
1868	3,552,811		—	—
1869	2,077,632		—	—
1870	603,834		—	—
1871	95,390		—	—
1872	704,959		—	—
1873	1,021,268		—	—
1874	4,238,631		—	—
1875	2,306,051		—	—
1875	—	—	—	—
1876	—	—	—	—
1877	—	—	—	—
1878	20,090	16,494	—	—
1879	352,437	58,892	—	—
1880	158,925	250,650	—	—
1881	383,340	245,961	—	—
1882	413,348	249,162	—	—
1883	316,910	3,935,019	—	—
1884	501,300	3,067,564	—	—
1885	571,858	2,699,473	—	—
1886	168,926	4,191,297	2,725	13,000
1887	613,772	4 876,752	20,397	13,000
1888	957,627	4,341,004	42,498	10,000
1889	1,919,341	4,045,826	147,870	165,657
1890	3,095,090	4,372,923	205,270	110,109
1891	1,523,426	4,089,201	89,300	69,616
1892	2,137,016	3,785,921	106,627	223,577
1893	2,301,397	2,959,446	75,561	135,240
1894	2,580,862	5,679,549	51,648	125,304
1895	1,605,723	8,607,025	77,259	106,105
1896	30,628,934	12,654,428	162,896	327,950
1897	31,401,725	40,850,645	215,016	626,870
1898	21,335 582	47,338,427	310,087	658,703
1899	16,973,888	47,084,496	480,453	1,199,741
1900	38,714,310	41,363,895	531,476	1,377,608
1901	20,947,869	24,494,375	515,866	1,487,990
1902	8,262,789	7,076,586	565,640	2,045,156
1903	3,676,241	7,118,575	543,907	1,665,080

Fiscal Year.	Agriculture and Commerce.	Communications.	Total.	Grand total.
1868	—	—	24,998,833	30,505,086
1869	—	—	11,425,609	20,785,840
1870	—	—	10,357,669	20,107,672
1871	—	—	7,008,776	19,235,158
1872	—	—	15,255,106	57,730,025
1873	—	—	12,039,048	62,678,600
1874	—	—	22,267,612	82,269,528
1875	—	—	13,292,424	66,134,772
1875	—	—	12,590,205	69,203,242
1876	—	—	2,493,631	59,308,957
1877	—	523,176	3,084,109	48,428,325
1878	—	465,835	4,954,626	60,941,336
1879	—	705,514	5,112,040	60,317,579
1880	352,707	826,164	2,843,574	63,140,896
1881	31,817	977,966	11,046,611	71,460,321
1882	7,181	636,908	13,729,940	73,480,667
1883	178,631	538,054	15,192,682	83,106,858
1884	166,197	94,591	15,938,554	76,663,108
1885	73,547	22,226	13,472,277	61,115,314
1886	76,260	31,044	15,610,167	83,223,960
1887	51,968	28,000	13,410,367	79,453,036
1888	722,319	960,000	15,064,308	81,504,024
1889	611,234	999,134	15,928,103	79,713,672
1890	342,281	1,343,999	15,372,972	82,125,403
1891	115,851	1,450,704	20,619,579	83,555,891
1892	377,657	2,311,482	12,916,710	76,734,740
1893	493,177	1,401,734	20,036,273	84,581,872
1894	333,905	1,449,027	17,707,297	78,128,643
1895	325,975	1,425,312	18,169,173	85,317,180
1896	488,032	4,738,193	68,143,692	168,856,508
1897	1,514,188	11,475,956	115,983,717	223,678,844
1898	2,312,004	9,406,803	100,685,424	219,757,568
1899	4,939,904	21,713,941	116,575,120	254,165,538
1900	9,372,883	30,149,620	143,615,893	292,750,059
1901	8,516,244	27,502,837	106,493,241	266,856,824
1902	4,049,070	23,448,625	104,156,229	281,753,195
1903	7,469,752	23,873,524	66,288,225	244,752,346

II. LOCAL FINANCES.

General Remarks.—The civic corporation system was first established in 1878 by the promulgation of the Prefectural Assembly Regulations and the Local Tax Regulations, but it was on the promulgation of the Law for Cities, and Towns and Villages in 1888 and of the Law for Districts and Prefectures in the year 1890 that the civic corporation system was completed. The Law for Districts and Prefectures was amended in 1889.

According to the existing regulations, the expenditures of civic corporations, are determined by estimates for which the approval of the local legislative bodies is necessary. The revenue consists of receipts accruing from the property of the corporations, fees for using such property, and other receipts. Any deficit is met by levying taxes, which are as follows for prefectural finances :—

Land rate not exceeding one-third of the land-tax.

Business tax and miscellaneous taxes.

House tax.

Taxes for civic corporations are :—

Rate on district taxes and prefectural taxes.

Special taxes either direct or indirect.

The District does not levy taxes upon its inhabitants, and the expenses required by it are supplied by the towns and villages contained in it, the ratio to be duly alloted. The allotment is collected by each town or village on the approval of its legislative council, and forwarded to the coffers of the district.

Before any new local tax is levied it must receive the approval of the prefectural or city, town or village legislative council as the case may be. For a tax of importance the sanction of the Ministers of Home Affairs and of Finance must be obtained.

The development of self-government affair is inevitably attended by an increase of expenditure. Less than ten years ago the prefectural and communal revenue aggregated about 59,660,000 *yen* and the expenditure about 48,970,000 *yen*. In 1899 the revenue and expenditure amounted to 145,510,000 *yen* and 120,060,000 *yen* respectively. This increase is chiefly attributable to the greater disbursements

required on account of public works, agriculture, education, industry, sanitary affairs, etc. A tendency in a similar direction must be expected with the progress of times, and the central Government is exercising strict attention to prevent any undue expansion of the local expenses. The following tables will demonstrate the progress of prefectural and communal finances subsequent to 1890 :—

STATISTICS.—Statistics relating to local finances are :—

TABLE I.—ANNUAL AMOUNT OF TOWN AND VILLAGE REVENUE.

(Settled Account).

(unit of *yen*).

		1890.	1891.	1892.	1893.
Rates on Direct National Taxes.	Land Rate	5,679,278	5,913,113	5,926,105	6,025,720
	Income Tax Rate ...	24,581	28,802	31,532	40,459
	Business Tax Rate ...	—	—	—	—
Rates on Prefectural Taxes.	House Tax	7,541,930	6,999,372	7,263,244	7,436,677
	Business Tax Rate ...	606,301	601,828	609,582	670,290
Rate on Indirect National Tax..		1,173	1,556	1,251	1,634
Special Taxes.	Average Rate	356,506	317,849	280,432	309,235
	Sundries	50,193	70,118	102,884	135,255
Service in Kind		324,395	274,361	305,342	313,296
Property		31,110	14,626	9,697	6,711
Total		14,615,467	14,221,624	14,530,069	14,939,277
Receipts from other Sources ...		5,705,457	7,605,952	8,610,321	9,152,767
Grand Total		20,320,924	21,827,576	23,140,390	24,092,044

		1894.	1895.	1896.	1897.
Rates on Direct National Taxes.	Land Rate	6,349,446	6,895,880	7,520,419	8,721,137
	Income Tax Rate ...	42,251	55,667	66,073	120,222
	Business Tax Rate ...	—	—	—	311,337
Rates on Prefectural Taxes.	House Tax	8,082,583	9,561,533	10,699,233	13,173,019
	Business Tax Rate ...	703,886	830,924	983,982	1,113,562
Rate on Indirect National Tax..		1,291	748	1,101	733
Special Taxes.	Average Rate	372,164	415,202	544,598	566,599
	Sundries	138,711	161,844	185,273	230,595
Service in Kind		268,851	265,615	285,960	476,103
Property		12,013	7,108	9,690	9,428
Total		15,971,196	18,194,521	20,296,328	24,722,735
Receipts from other Sources ...		10,308,516	10,756,229	12,040,832	16,144,099
Grand Total		26,281,612	28,950,750	32,337,160	40,866,834

		1898.	1899.	1900.
Rates on Direct National Taxes.	Land Rate	9,913,975	10,250,588	11,661,724
	Income Tax Rate ...	155,085	312,636	444,232
	Business Tax Rate ...	533,177	578,188	717,626
Rates on Prefectural Taxes.	House Tax	15,765,174	18,564,453	21,488,592
	Business Tax Rate ...	1,360,892	1,576,817	1,956,965
Rate on Indirect National Tax..		932	3,530	4,400
Special Taxes.	Average Rate	747,854	777,832	835,681
	Sundries	279,677	321,185	328,515
Service in Kind		374,949	400,344	399,740
Property		9,705	9,282	8,381
Total		19,141,420	32,794,855	37,845,856
Receipts from other Sources ...		17,549,587	20,406,697	24,423,937
Grand Total		46,691,007	53,201,552	62,269,792

Note :—In consequence of the destruction by fire, in 1894 of the documents at a certain village office in Nagano-ken, a sum of 1,900 *yen* was included in the grand total alone, its distribution among the different headings not being clear.

TABLE II.—ANNUAL AMOUNT OF TOWN AND VILLAGE EXPENDITURE. (Settled Account).

(unit of *yen*).

Items.	1890.	1891.	1892.	1893.
Offices	6,649,958	6,554,562	6,600,276	6,741,055
Assemblies	317,211	315,453	355,588	343,251
Public Work	4,759,018	5,447,582	5,636,870	5,462,255
Education	6,260,326	6,738,466	7,290,187	7,909,885
Sanitary	406,984	318,798	380,967	432,659
Police	163,849	151,645	158,108	163,009
Industry	115,118	86,569	113,213	128,967
Public Loans	140,393	242,203	365,023	469,882
Control of Property	5,476	8,758	15,996	35,461
Taxes and other Burdens ...	120,105	263,387	333,810	366,003
Sundries	207,936	404,043	243,112	281,789
Funds and Reserves	33,172		43,444	69,571
Subsidies and Contributions.	—		8,490	14,806
Others	58,443		49,446	32,898
Total	19,237,989	20,531,466	21,598,530	22,451,441

Items.	1894.	1895.	1896.	1897.
Offices	6,974,378	7,316,991	7,829,910	8,887,201
Assemblies	336,973	363,598	378,797	425,068
Public Works	6,295,709	5,433,882	5,591,935	8,466,227
Education	8,237,433	9,159,759	10,639,378	12,695,094
Sanitary	705,920	1,802,466	1,712,367	1,822,181
Police	304,770	352,465	393,576	350,280
Industry	161,397	145,094	369,898	820,667
Public Loans	644,708	960,575	1,183,418	1,693,851
Control of Property	56,424	62,252	89,463	135,291
Taxes and othe Burdens ...	467,413	624,532	1,194,301	1,687,204
Sundries	347,062	463,300	539,843	654,681
Funds and Reserves	99,603	113,809	164,693	470,290
Subsidies and Contributions.	12,297	5,966	9,830	22,144
Others	52,274	71,138	55,762	71,637
Total	24,696,364	26,875,827	30,153,171	38,201,816

Items.	1898.	1899.	1900.
Offices	10,347,929	11,515,996	12,163,714
Assemblies	457,621	474,912	528,838
Public Works	7,427,855	7,083,796	8,162,496
Education	14,593,100	16,984,949	21,120,549
Sanitary	3,121,742	4,628,219	4,323,066
Police	379,959	392,296	422,819
Industry	495,615	570,295	693,060
Public Loans	2,323,787	2,609,806	3,576,112
Control of Property	138,157	210,760	460,692
Taxes and other Burdens ...	2,557,262	3,084,007	3,918,615
Sundries	821,687	827,451	1,299,691
Funds and Reserves	608,199	799,493	995,092
Subsidies and Contributions.	71,592	86,256	245,563
Others	98,374	63,019	89,720
Total	43,442,879	49,376,255	58,000,025

TABLE III.—ANNUAL AMOUNT OF MUNICIPAL REVENUE.

(Settled Account).

(unit of *yen*).

	1890.	1891.	1892.	1893.
Direct Tax Rates. Land Tax Rate ...	103,951	104,530	98,495	103,993
Direct Tax Rates. Income Tax Rate...	115,769	113,951	129,155	136,031
Direct Tax Rates. Business Tax Rate.	—	—	—	—
Local Tax Rates. Household Rate ...	327,112	402,034	364,641	409,064
Local Tax Rates. House Tax	410,865	384,498	338,615	367,003
Local Tax Rates. Business Tax ...	364,056	375,125	399,830	485,330
Indirect National Tax Rates	11,825	10,559	11,435	14,779
Special Taxes	28,838	45,191	59,530	111,088
Service in Kind	—	—	—	—
Total	1,362,416	1,435,888	1,401,701	1,627,288
Ultra-Taxation Receipts ...	1,089,030	4,204,584	8,149,362	8,383,242
Grand Total	2,451,446	5,640,472	9,551,063	10,010,530

	1894.	1895.	1896.	1897.
Direct Tax Rates. Land Tax Rate ...	109,217	112,921	119,862	168,209
Direct Tax Rates. Income Tax Rate...	157,697	178,558	222,291	304,102
Direct Tax Rates. Business Tax Rate.	—	—	—	660,266
Local Tax Rates. Household Rate ...	416,271	645,283	503,205	612,414
Local Tax Rates. House Tax	481,154	531,619	603,747	784,021
Local Tax Rates. Business Tax ...	612,211	780,947	989,292	605,146
Indirect National Tax Rates	34,850	8,543	7,889	20,402
Special Taxes	90,871	171,375	229,499	325,975
Service in Kind	610	610	—	—
Total	1,902,881	2,249,856	2,675,785	3,480,535
Ultra-Taxation Receipts ...	8,481,926	8,721,315	8,449,331	10,181,533
Grand Total	10,384,807	10,971,171	11,125,116	13,662,068

	1898.	1899.	1900.
Direct Tax Rates. Land Tax Rate ...	239,597	243,506	389,360
Direct Tax Rates. Income Tax Rate...	410,836	692,924	1,190,595
Direct Tax Rates. Business Tax Rate.	965,494	1,170,527	1,791,788
Local Tax Rates. Household Rate ...	731,672	955,608	968,337
Local Tax Rates. House Tax	1,056,247	1,482,067	1,234,253
Local Tax Rates. Business Tax ...	526,138	655,023	499,501
Indirect National Tax Rates	274	14,749	2,195
Special Taxes	719,659	875,872	3,553,493
Service in Kind	—	—	—
Total	4,649,917	6,090,279	9,629,522
Ultra-Taxation Receipts ...	10,661,724	13,742,988	14,744,134
Grand Total	15,311,641	19,833,267	24,373,656

TABLE IV.—ANNUAL AMOUNT OF MUNICIPAL EXPENDITURES.

(Settled Account).

(unit of *yen*).

Items.	1890.	1891.	1892.	1893.
Offices	501,556	537,905	526,294	535,954
Assemblies	26,929	53,838	43,861	54,185
Public Works	540,647	444,712	563,871	632,978
Education	571,095	865,083	920,165	1,163,437
Sanitary	113,957	99,915	108,708	154,298
Police	46,408	44,749	43,427	51,203
Industry	3,240	5,757	6,049	4,661
Public Loans	102,069	207,475	288,908	439,128
Control of Property	3,829	57,968	91,462	109,839
Taxes and Other Burdens...	1,682	3,265	2,347	2,794
Sundries	59,494	73,976	81,657	62,269
Funds and Reserves	10,871	421	100,257	94,992
Subsidies and Contributions	—	—	—	40
Others	79,111	580,263	1,226,031	1,192,326
Total	2,060,888	2,957,327	3,985,037	4,498,354

Items.	1894.	1895.	1896.	1897.
Offices	539,431	556,378	598,487	779,693
Assemblies	69,479	43,021	49,403	59,467
Public Works	467,144	512,656	994,696	1,272,677
Education	1,314,974	1,338,289	1,699,334	2,354,009
Sanitary	176,331	353,857	303,233	399,690
Police	57,114	76,830	64,348	85,585
Industry	29,017	12,306	28,267	30,718
Public Loans	497,763	628,460	996,292	2,480,128
Control of Property	103,490	110,633	120,419	161,952
Taxes and Other Burdens...	3,730	3,745	5,796	75,605
Sundries	100,294	132,346	238,476	217,768
Funds and Reserves	104,699	92,627	98,342	77,273
Subsidies and Contributions	621	4,943	938	2,760
Others	1,698,599	2,376,320	2,755,742	2,571,470
Total	5,168,694	6,242,411	7,953,773	10,568,795

Items.	1898.	1899.	1900.
Offices	1,088,405	1,263,941	1,625,285
Assemblies	75,169	73,058	84,163
Public Works	1,472,963	2,083,294	2,893,994
Education	2,639,947	3,354,027	4,071,702
Sanitary	446,467	653,608	1,069,970
Police	90,994	104,524	144,416
Industry	37,331	53,750	67,195
Public Loans	1,481,642	1,656,745	2,190,588
Control of Property	210,958	337,039	611,964
Taxes and Other Burdens...	289,858	400,328	1,398,714
Sundries	253,042	218,956	521,725
Funds and Reserves	121,279	144,251	642,484
Subsidies and Contributions	2,129	36,708	31,966
Others...	3,069,466	4,629,687	3,689,535
Total	11,279,650	15,010,516	19,043,701

TABLE V.—ANNUAL AMOUNT OF PREFECTURAL REVENUE.

(Settled Account for Years Prior to 1900 and Estimates after Those of 1901).

(unit of *yen*).

Items.	1892.	1893.	1894.	1895.
Land Rate	8,409,156	8,904,420	9,023,498	9,523,782
Business Tax	2,746,183	2,876,027	2,912,033	3,031,368
Miscellaneous Taxes	1,671,685	1,772,792	1,869,272	1,995,302
Rate on Business Tax ...	—	—	—	—
House Tax	3,186,331	3,157,645	3,342,061	3,474,070
Appropriated from Cities, Towns and Villages ...	—	—	—	—
Income Tax Rate	—	—	—	—
Total	16,011,355	16,710,884	17,146,864	18,024,522
Ultra-Taxation Receipts ...	10,958,162	15,103,524	12,417,622	9,710,790
Grand total...	26,969,517	31,814,408	29,564,486	27,735,312

Items.	1896.	1897.	1898.	1899.
Land Rate	12,204,844	13,327,790	17,458,866	20,718,817
Business Tax	3,375,309	1,895,888	2,123,415	2,291,587
Miscellaneous Taxes	2,256,617	3,486,296	4,097,252	4,619,667
Rate on Business Tax ...	—	711,795	886,813	928,062
House Tax	4,993,134	5,318,838	6,604,031	7,940,101
Appropriated from Cities, Towns and Villages ...	105,070	68,907	282,096	557,349
Income Tax Rate	—	—	—	1,435
Total	22,934,974	24,809,484	31,425,473	37,057,018
Ultra-Taxation Receipts ...	18,098,235	21,229,710	16,187,123	19,214,261
Grand total	41,033,209	46,039,194	47,639,596	56,271,279

Items.	1900.	1901.	1902.
Land Rate	21,938,961	21,189,944	21,988,227
Business Tax	2,389,934	2,418,737	2,635,850
Miscellaneous Taxes	5,134,914	5,604,885	6,134,245
Rate on Business Tax ...	900,969	892,999	964,921
House Tax	7,896,753	7,598,543	7,755,634
Appropriated from Cities, Towns and Villages ...	1,533,099	1,353,796	1,554,023
Income Tax Rate	11,560	13,261	32,922
Total	39,806,190	39,072,165	41,065,822
Ultra-Taxation Receipts ...	19,067,499	10,847,752	10,632,310
Grand total...	58,873,689	49,919,917	51,698,132

TABLE VI.—ANNUAL AMOUNT OF PREFECTURAL EXPENDITURE.

(unit of *yen*).

Items.	1892.	1893.	1894.	1895.
Police	4,702,037	4,732,562	4,750,260	4,943,067
Police Works	7,305,504	7,320,626	8,827,577	7,448,422
Subsidies to Above	2,541,265	3,382,101	3,113,767	2,114,706
Assemblies	348,632	312,995	301,995	301,490
Sanitary	379,840	425,694	527,891	998,296
Subsidies to Above	—	—	—	58,382
Education	1,193,599	1,333,129	1,288,580	1,653,176
Subsidies to Above	77,295	111,535	42,864	51,549
Office Expenses, Salaries and Allowances Relating to District Offices	1,728,243	1,690,398	1,691,866	1,678,226
Industry	246,386	303,777	431,998	460,718
Subsidies to Above	—	—	—	36,814
Collection of Prefectural Taxes	315,110	324,830	362,670	377,218
Allowances to Prefectural Offices	31,431	60,509	75,108	74,767
Share in River Work Expense	—	—	—	—
Prefectural Loans	—	—	—	740,310
Sundries	4,519,648	4,505,645	4,587,974	3,865,501
Grand total...	23,388,990	24,503,801	26,002,550	24,802,642

Items.	1896.	1897.	1898.	1899.
Police	5,070,201	5,577,134	6,621,542	7,070,202
Police Works	11,415,155	14,895,778	13,085,775	15,629,798
Subsidies to Above	2,933,497	5,576,837	4,021,542	3,139,201
Assemblies	346,462	340,594	301,925	351,264
Sanitary	808,398	787,739	1,027,749	1,713,159
Subsidies to Above	126,576	135,394	622,441	1,065,075
Education	2,404,241	2,788,026	4,317,481	6,278,373
Subsidies to Above	165,062	206,616	158,593	266,698
Office Expense, Salaries and Allowances Relating to District Offices	1,764,860	1,953,096	2,197,661	2,325,511
Industry	667,225	723,871	951,556	1,135,045
Subsidies to Above	54,509	223,251	178,778	248,967
Collection of Prefectural Taxes	442,670	495,135	591,256	656,967
Allowances to Prefectural Offices	127,690	254,402	397,385	554,582
Share in River Work Expense	293,300	293,300	293,300	295,300
Prefectural Loans	772,713	952,433	1,466,267	1,629,005
Sundries	4,237,894	4,843,621	5,486,470	6,090,037
Grand tolal...	31,638,453	40,047,227	41,719,721	48,478,005

Items.	1900.	1901.	1902.
Police	7,801,318	8,434,595	9,132,134
Police Works	15,792,611	11,682,518	12,872,976
Subsidies to Above	3,198,485	2,535,708	2,399,653
Assemblies	449,489	450,540	469,372
Sanitary	1,600,515	1,224,410	1,288,676
Subsidies to Above	1,464,728	643,139	841,402
Education	8,584,511	9,931,556	10,082,010
Subsidies to Above	276,508	441,006	487,952
Office Expense, Salaries and Allowances Relating to District Offices	2,726,287	2,842,960	2,920,336
Industry	1,737,493	2,113,112	2,668,581
Subsidies to Above	318,793	519,354	636,806
Collection of Prefectural Taxes	757,323	761,894	803,301
Allowances to Prefectural Offices	753,788	946,771	1,073,666
Share in River Work Expense	864,654	865,655	863,654
Prefectural Loans	2,786,748	3,908,448	3,712,805
Sundries	2,909,336	2,591,292	1,284,228
Grand total...	52,022,567	49,891,958	51,537,552

Note:—As the sum of 28,821 *yen* of Toyama-ken in 1899 could not be distributed among the respective items owing to the occurrence of fire, it was included in the grand total alone.

CHAPTER II.—Loans.

National Loans—Local Loans.

I. NATIONAL LOANS.

General Remarks.—As already described in the section of finances, administrative and all other national affairs underwent a radical change at the time of the Restoration and many of the new measures were carried out with funds obtained by raising loans. The amount of loans thus raised early in the era has gone on increasing with the progress of the times, for the State had to adjust its finances, strengthen its armaments, and to devise measures calculated to improve and encourage the development of economic undertakings, communication service, etc. The only instance in which loans were raised for other purposes was in connection with the South-western Civil War and the Japan-China War. The Nine per cent. Sterling Foreign Loan raised at London in April 1870 was the first national loan raised by Japan. This was followed by the floating of the Seven per cent. Sterling Foreign Loan. The former was devoted to laying railroads between Tokyo and Yokohama and between Kobe and Osaka, while the latter was used for supplying funds to those "Shizoku" who had on their own accord surrendered their hereditary pensions and who were entering on a business career.

First Foreign Loan.

In March of the same year the "New" and "Old" Loan Regulations were enacted with the object of converting the debts incurred by the feudal princes into national debts, and bringing the financial affairs of the country into a state of uniformity. This loan was the first raised at home.

First Domestic Loan.

In 1874 the Voluntarily Capitalized Pension Bonds were issued for granting some relief in the form either of cash or bonds to those "Shizoku" who had surrendered their pensions, in order to enable them to procure funds for engaging in business pursuits. The greater part of the cash required for this purpose came from the proceeds of the Foreign Loans above described. In 1876, when the old hereditary pension system was entirely abolished, a regular system for compounding the pensions with capitalized pension bonds was instituted. In 1878 a similar favor of granting pension bonds was extended to Shinto priests who had, in consequence of the change in the administration of the Shinto temples, been deprived in 1871 of their posts and of their means of subsistence.

Capitalized Pension Bonds.

It was natural that in accomplishing such a grand work as the Restoration the Government should have required an immense amount of money and that it should have been compelled to issue paper money to meet a deficit in the treasury. But this issue of paper money occasioned great financial disorder. To remedy this state of things, the Government promulgated in 1873 the "Kinsatsu" Exchange Loan Bond Regulations, with the object of withdrawing from circulation paper money in exchange for the bonds, exchange to be made at the request of the owners. In 1884 the withdrawal was carried out on a larger scale than before, in order to bring paper money to par. The issue of the bonds in accordance with the "Kinsatsu" Exchange Loan Bonds was discontinued and instead the Unregistered "Kinsatsu" Exchange Bonds were issued. Coming to 1899, with the object of redeeming 1-*yen* paper notes and notes of larger denomination, the Government borrowed from the Bank of Japan 22 million *yen* in the shape of convertible bank notes.

"Kinsatsu" Exchange Loan Bonds.

Meanwhile matters relating to the development of industry also received a due share of attention from the Government. In the year 1878 the Government raised the Public Undertakings Loan to the amount of 12,500,000 *yen* and undertook the work of laying the Kyoto-Otsu Railroad, the Tsuruga-Ogaki Railroad, the construction of a new road the Shimizu-goe pass, the drainage of Lake Inawashiro, the supply of water to Nasu plain, etc. Then in 1884 and 1885 the Nakasendo Railroad Loan amounting to 20,000,000 *yen* was raised to connect Tokyo and Kyoto by means of a railroad service through the Nakasendo route. This plan was subsequently abandoned, and part of the fund raised for the purpose was appropriated on account of the work of the Tokaidō Railroad and other railroad the speedy construction of which was necessary. The deficit in the fund was met by raising in 1888 the Railroad Supplementary Loan. From 1893 the Railroad Loan has been raised several times, and the construction of important lines has been completed, with the result that this service has been brought to a state of great efficiency and usefulness.

Economic Loans.

The Hokkaidō Railroad Loan was established in 1897, the loan to be floated according to the state of the market and as the progress of the work requires.

The outbreak of the South-Western Civil War in 1877 involved big disbursements which could not be met out of the ordinary revenue. Fortunately the Fifteenth National Bank just started about that time had a supply of capital which was too great to be profitably manipulated, so that it asked to the Government to use part of its capital as a loan. The Government accepted this offer, and borrowed a sum of 15,000,000 *yen* as a war fund.

Between 1886 and 1889 a Navy Loan amounting to 17,000,000 *yen* was raised with the object of bringing the Imperial fleet to a state of greater efficiency and making it more adequate to defend our expanded interests. The fund raised was used for establishing a number of admiralties, arsenals, building warships, and also for manufacturing torpedoes and ammunition of war.

Navy Loan.

Meanwhile as a result of the institutions of the State having

been brought to a state of greater perfection and especially as a result of the proper development of organs of monetary circulation, the scale of rate of interest had began to fall, so that coming to 1896 the interest for deposits stood at about 3 to 4 per cent. The national bonds bearing interest at the rate of 6 per cent. or over naturally began to rise above par. The time had therefore arrived for consolidating several kinds of loans that had formerly been raised at a higher rate of interest. Accordingly the Treasury promulgated in October of that year the Consolidated Loan Bonds Regulations, in order, on the one hand, of consolidating the loans bearing a higher rate of interest and of reducing the expense of the Treasury as also of the burden of the people, and on the other of unifying the various kinds of loans. The loan bonds to be redeemed by this arrangement were the 6 per cent. "Kinsatsu" Exchange Loan Bonds, 6 per cent. Capitalized Pension Bonds, 6 per cent. Public Undertaking Bonds, 6 per cent. Unregistered "Kinsatsu" Exchange Loan Bonds, 7 per cent. Nakasendō Railroad Bonds, 7 per cent. Voluntarily Capitalized Loan Bonds, 7½-per cent. South-western War Loan, etc. All these loans aggregated over 173,010,000 *yen*. The regulations having been drawn up with the object of unifying all the different kinds of loans, they remain to this day as the fundamental provisions for regulating matters of loans.

Consolidated Loan.

In 1894 some trouble in Korea culminated in the outbreak of war between this country and China. The war involved immense expenses as to oblige the Government to promulgate an Urgency Imperial Ordinance entitling it, to float at its own discretion, loans and to contract other kinds of debts. The Imperial Diet that was convoked soon after approved of the measure of disbursing the war expense of 250,000,000 *yen* and of supplying that amount by means of domestic loans. In accordance with this programme the Government raised the War Loan and also got a loan from the Bank of Japan and procured the fund needed in replenishing the war chest. On the conclusion of peace with China in April 1895, it was arranged for the convenience of both parties that the indemnity from China should be paid and received at London and in English pound sterling. The indemnity was

Japan-China War Loan.

set apart as a special account, so that it might be afterwards manipulated to greater advantage. At the same time this account led to the opening of a mutual loan arrangement between the Treasury and the Bank of Japan, with the result that a species of short-term national loans was brought into existence.

The glorious termination of that war imparted a powerful impetus to the development of national affairs in all spheres of activity. The Government itself also decided to undertook several important measures for promoting our economic affairs and for supplementing national armaments. With the consent of the Imperial Diet the Government made arrangements for improving the existing system of railroads, constructing the Hokkaidō railroad, establishing a steel foundry, expanding telephone service, creating the tobacco monopoly, strengthening the national defence, etc. These measures appeared in the shape of Public Undertakings Loan promulgated in 1896.

Post-Bellum Programme Loans.

The financial results of the Japan-China War were not confined to those enunciated above, for the annexation of Formosa to Japanese dominions necessitated the raising of a loan for exploiting the resources of the island. This loan is the Formosa Public Undertaking Loan issued in 1899.

In 1897 the Law for readjusting the Capitalized Pension Bonds was promulgated, in order to adjust the capitalized pensions, which therefore required the issue of a loan. However the various matters connected with this loan being yet under investigation, some time must expire before the loan is to be raised.

Besides these mentioned above, there are some contract affairs which involve disbursements not covered by Budgets, and for which the consent of the Diet has been secured. One of them relates to the procuring of the North China Affair Fund (1901 fiscal year), another to a loan to be transferred to the Iron Foundry Working Fund (1902), while there are also the Treasury Bonds Regulations issued in 1884 and Law No. 16 issued in 1894 for raising loans. These two latter

Exchequer Bonds, etc.

legislative measures invest in the Treasury an important privilege of procuring funds with which to meet the prescribed outlays originally arranged to be paid with the proceeds of the year's instalment of loans. For it frequently happens that the Treasury is obliged to fulfill payment while the proceeds from the loan are not yet forthcoming. By virtue of this expedient the Treasury is enabled to raise short-termed loans and thus to meet the necessity of prescribed outlays.

In consequence of the great discretion exercised by the Treasury in adjusting the State finances, and as the Treasury, in pursuance of that judicious policy, has converted and consolidated loans bearing higher rates of interest, of the 21 different loans heretofore raised by the Government (Treasury Bonds and short-termed loans excepted), 11 have already been redeemed or converted and consolidated, and there remain at present 10 loans which the Empire has yet to redeem.

Mode of Redemption.

The redemption of the loans was previously made by redeeming the prescribed instalment for such of the loans whose redemption was regulated in that way; also by converting and consolidating old loans, and also by redeeming by drawings a certain amount of bonds. Later the Government, with the consent of the Diet, made an arrangement for purchasing, whenever the state of the market favored such purchases, loan bonds, and of redeeming them by this process. This was duly provided by Law No. 5 issued in 1896. This purchasing method and the drawing method have since been availed of for redeeming loan bonds, and for adjusting State finances.

The history and all the circumstances relating to the origin of national loans having been described in this section, it remains for us to give some brief account of the items of those loans with their respective amounts, the classfication of the loans, and some other financial subjects.

Items of National Loans.—The loans heretofore raised by the Imperial Government, excepting the Treasury Bonds and short-termed loans, number 21, to which one loan to be newly raised some time in future to be added, making in all 22 items, as appended in the following table:—

EXISTING LOANS.

Name.	Date of Issue of Regulations or Conclusion of Contract.	Rate of Interest.	Months for Paying Interest.
Old Loan...	Mar. 25, 1873.	No Interest.	—
Captalized Pension Loans ...	Aug. 5, 1876.	5%, 6%, 7%, 10%	May and Nov.
Navy Loan	June 12, 1886.	5%	May and Nov.
Consolidated Loan...	Oct. 16, 1886.	5%	June and Dec.
Loan for Redeeming Paper Money...	Aug. 9, 1890.	No Interest.	—
Railroad Loans	June 20, 1892. April 19, 1899.	5% 4%	Mar. and Sept. June and Dec.
War Loans	Aug. 15, 1894. Oct. 23, 1894. Mar. 2, 1895.	5%	June and Dec.
Public Undertakings Loans ...	Mar. 29, 1896. April 19, 1899.	5% 4%	Mar. and Sept. June and Dec.
Hokkaidō Railroad Loan ...	May 13, 1896. April 19, 1899.	5% 4%	Mar. and Sept. June and Dec.
Formosan Public Undertaking Loan	Mar. 20, 1899.	5%	June and Dec.
Foreign Loans 9% 7%	April 23, 1870. Jan. 13, 1873.	9% 7%	Feb. and Aug. Jan. and July.
New Loan	Mar. 25, 1873.	4%	June and Dec.
Kinsatsu Exchange Loan ...	Mar. 30, 1873.	9%	May and Nov.
Capitalized Pension Loan ...	Mar. 28, 1874.	8%	Nov.
Pro-Rata Pension Bonds for the Former Shinto Priest...	Mar. 13, 1877.	8%	Nov.
South-Western War Loan ...	May 22, 1877.	7·5%	May and Nov.
Public Undertaking Loan ...	May 1, 1878.	6%	June and Dec.
Nakasendō Railroad Loan ...	Dec. 28, 1883.	7%	June and Dec.
Unregistered Kinsatsu Exchange Loan	Dec. 28, 1883.	6%	May and Nov.
Railroad Supplementary Loan.	Jan. 28, 1889.	5%	June and Dec.

TO BE RAISED IN FUTURE.

Capitalized Pension Adjustment Loan	Oct. 29, 1897. Mar. 22, 1899.	5%	Mar. and Sept.

EXISTING LOANS.

Name.	Date of Issue.	Term for Leaving Loans Unredeemed.	Term of Redemption. 1st Payment.	Term of Redemption. last Payment.
Old Loan	1872.	—	1872.	1921.
Capitalized Pension Loans ..	1877.	5 years.	1882.	1906.
Navy Loan	1886-1889.	5 years.	1891.	1923.
Consolidated Loan	1887-1897.	5 years.	1892.	1951.
Loan for Redeeming Paper Maney	1890.	3 years.	1893.	1912.
Railroad Loans	1893-1902.	5 years.	1898.	1956.
	1899.	10 years.	1902.	1953.
War Loans	1895-1900.	5 years.	1900.	1954.
Public Undertakings Loans.	1897-1902.	5 years.	1902.	1957.
	1899.	10 years.	1909.	1953.
Hokkaidō Railroad Loan ...	1898-1901.	5 years.	1903.	1956.
	1899.	10 years.	1909.	1953.
Formosan Public Undertaking Loans	1900-1902.	10 years.	—	1946.

LOANS REDEEMED.

Foreign Loans	9% 1870.	3 years.	1873.	1882.
	7% 1873.	2 years.	1875.	1897.
New Loan	1872.	3 years.	1875.	1896.
Kinsatsu Exchange Loan ...	1873-1883.	3 years.	1876.	1897.
Capitalized Pension Loan ...	1874-1876.	2 years.	1876.	1884.
Pro-Rate Pension Bonds for the Former Shinto Priest.	1878.	2 years.	1880.	1886.
South-Western War Loan...	1877-1878.	Until 1896.	—	1897.
Public Undertaking Loan ...	1878.	2 years.	1880.	1902.
Nakasendō Railroad Loan...	1884-1885.	5 years.	1889.	1914.
Unregistered Kinsatsu Exchange Loan	1874-1876.	5 years.	1889.	1920.
Railroad Supplementary Loan...	1889.	5 years.	1894.	1943.

TO BE RAISED IN FUTURE.

Capitalized Pension Adjustment Loan	—	5 years.	—	—

The items of short-term loans, that is to say, the Exchequer bonds and temporary loans are given below. Of these items, those that are remaining are Exchequer bonds, temporary loans contracted for adjusting balance of receipts and disbursements of Exchequer, the loan appropriated on account of the Formosan Public Undertaking Fund, and the loan on account of the North China Affair. There is only one loan to be contracted in future, according to the prescribed programme, and that is a loan appropriated on account of the Iron Foundry Working Found. The particulars are as appended in the table.

EXCHEQUER BONDS.

Date of Issue of Regulations.	Cause of Loans.	Regulation Interest.	Actual Interest	
			Per Annum.	Per Diem.
Sept. 20th, 1884.	—	Interest-Bearing or with Discount (Rate Fixed by the Finance Minister).	4—7½%	Discount 1.7—1.9 *sen.*

TEMPORARY LOANS.

June 11th, 1894.	For Adjusting Exchequer Receipts and Payments.	Interest-Bearing.	1—10%	2.2—2.4 *sen.*
Oct. 23rd, 1894.	Japan-China War.	Not more than 6%	5%	—
Mar. 2nd, 1895.	Do.	Do.	6%	—
Mar. 4th, 1896.	Mutual Accommodation between Exchequer Cash Account and Indemnity Deposits.	Rate to be Fixed by the Finance Minister.	2% at First, No Interest Afterward.	—
Mar. 20th, 1899.	Transferred Toward Formosan Undertaking Fund.	Rate to be Fixed by Government.	7%	—
——	Transferred Toward North China Affair Fund.	Not more than 8%	8%	—
——	For Supplementing Iron Foundry Working Fund.	Not more than 7%	—	—

AMOUNT OF THE DEBTS.—As mentioned in the preceding paragraph, the first loan ever raised by the Imperial Government was the 9 per cent. foreign loan, while in respect to redemption

the repayment in 1872 of the first instalment of the Old Loan was the first. From that time forward the raising of new loans was generally alternated by the redemption of the old, and though the amount remaining unpaid necessarily differed according to the times, in general it grew larger with lapse of time. The Capitalized Pension Loan raised in 1877 amounted to an immense sum, as it was involved a momentous change in the social organization of the country. The sum was no less than 173,900,000 *yen* in round numbers, and the incurring of this enormous loan raised at one bound the total sum of the State liabilities. The Consolidated Loan raised in accordance with the Regulations promulgated in 1886 was still larger, as it amounted to 175,000,000 *yen*. However as this loan was raised with the primary object of converting and consolidating loans bearing higher rates of interest, the flotation of this loan, nominally stupendous as it was, did not materially alter the sum total of the State liabilities. The outbreak of the Japan-China War in 1894 and the necessity it occasioned of the war loan and temporary loans swelled all at once the loans of the State, and this tendency was further accelerated by the appearance of the Public Undertakings Loan required by the various post-bellum measures. At the end of the 1902 fiscal year, the national debts reached the figures of no less than 584,620,000 *yen* approximately. Appended are the tables demonstrating the viscissitudes of the national loans since the first loan of the 9-per cent. foreign loan was raised.

Capitalized Pension Loan.

Consolidated Loan.

Total National Debts.

Year.	Amount of Loans.	Amount Redeemed.	Amount Remaining at the End of the Year.	Debt per Capita.
1870–'1	4,880,000.000	—	4,880,000.000	.147
1872...	23,395,550.000	219,454.500	28,056,095.500	.843
1873...	13,292,200.000	707,454.500	40,640,841.000	1.209
1874...	6,986,250.000	707,454.500	46,919,636.500	1.380
1875...	10,230,550.000	1,339,994.500	55,810,192.000	1.625
1876...	7,400.000	1,890,248.500	53,927,343.500	1.557
1877...	183,388,900.000	975,854.500	236,340,389.000	6.772
1878...	18,348,050.000	2,324,273.500	252,364,165.500	7.055
1879...	—	2,165,406.500	250,198,759.000	6.964

Year.	Amount of Loans.	Amount Redeemed.	Amount Remaining at the End of the Year.	Debt per Capita.
1880...	3,002,650.000	3,863,178.500	249,338,230.000	6.858
1881...	627,550.000	3,838,239.500	246,127,541.000	6.706
1882...	427,950.000	6,044,207.500	240,511,283.500	6.497
1883...	372,550.000	13,220,944.500	227,662,889.000	6.079
1884...	16,414,600.000	4,215,575.500	239,861,913.500	6.334
1885...	6,582,700.000	5,188,626.500	241,255,987.500	6.324
1886...	41,682,600.000	25,456,272.500	257,482,314.500	6.687
1887...	74,554,450.000	66,644,182.500	265,392,582.000	6.793
1888...	48,872,900.000	54,196,662.500	260,068,819.500	6.566
1889...	31,166,850.000	31,182,553.500	260,053,216.000	6.490
1890...	25,347,450.000	10,163,996.500	275,236,669.500	6.804
1891...	19,462,450.000	20,073,110.500	274,626,009.000	6.744
1892...	40,850,350.000	37,582,047.500	277,894,311.500	6.763
1893...	18,987,900.000	30,067,360.500	266,814,851.000	6.447
1894...	32,500,000.000	16,078,797.500	283,336,053,500	6.774
1895	144,234,000.000	35,346,158.500	392,123,895,000	9.276
1896	105,928,875.000	70,930,835.500	427,121,934.500	10.001
1897...	57,453,378.000	72,791,052.500	411,784,260.000	9.014
1898...	61,123,350.000	59,625,736.500	413,281,873.500	8.940
*1899...	100,365,750.000	10,446,974.500	503,200,649.000	10.733
1900...	31,125,400.000	7,661,874.500	526,664,194.500	11.089
1901...	107,710,800.000	60,409,954.500	573,965,040.000	12.084
1902...	115,693,050.000	94,014,564.500	595,643,525.000	12.541

Notes:—* The population of Formosa is included in the returns for this and subsequent years, and as the census returns for 1901 and 1902 are not forthcoming, those for 1900 were tentatively used for those two years.

The loans given in the foregoing table sum up to 1,345,016,553 *yen*, while the amount redeemed totalled 749,373,027.500 *yen* (the total amount of the loans divided by 32, the number of years intervening between April 1870 and March 1902, the average of loan contracted per year amounts to 42,031,767 *yen* and the redemption made averages 23,417,907 *yen* approximately). Hence the amount remaining unredeemed at the end of March 31st, 1900, was 595,643,525.500 *yen*. The unredeemed amount distributed among the different loans, the following table is obtained:—

National Debts.	Amount Raised.	Amount. Redeemed.	Amount Remaining Unredeemed.
9-per cent. Foreign Loans	4,880,000	4,880,000	—
7-per cent. Foreign Loans	11,712,000	11,712,000	—
New Loan...	12,422,825	12,422,825	—
Old Loan	10,972,725	6,803,095	4,169,636
Kinsatsu Exchange Loan	6,669,250	6,669,250	—
Voluntarily Capitalized Pension Loan ...	16,565,850	16,565,850	—
Capitalized Pension Loan	173,902,900	149,774,010	24,128,890
Pro-rate Capitalized Pension Loan for Former Shinto Priests...	334,050	334,050	—
Public Undertaking Loan	12,500,000	12,500,000	—
Nakasendo Railroad Loan	20,000,000	20,000,000	—
Unregistered Kinsatsu Exchange Loan...	7,929,900	7,929,900	—
Navy Loan	17,000,000	8,203,400	8,796,600
Consolidated Public Loan	175,000,000	7,663,550	167,336,450
Railroad Supplementary Loan	2,000,000	2,000,000	—
Railroad Loan...	62,559,500	13,728,050	48,831,450
War Loan...	124,920,750	9,112,700	115,808,050
Public Undertaking Loan	144,977,450	11,813,150	133,164,300
Hokkaidō Railroad Loan	4,912,000	—	4,912,000
Formosan Undertaking Public Loan ...	11,246,150	—	11,246,150
Total	820,505,350	302,111,825	518,393,526
Exchange Bonds	162,866,509	142,866,500	20,000,000
South-western War Loan	15,000,000	15,000,000	—
Paper-Notes Redemption Fund Loan ...	22,000,000	—	22,000,000
Temparary Loans	324,644,703	289,394,703	35,250,000
Total...	361,644,703	304,394,703	57,250,000
Grand total	1,345,016,553	749,373,028	595,643,526

On examining the amount of interest paid for the national debts that are bearing interest, the rate of interest show a gradual falling off, but the aggregate amount paid on this account has increased to a greater or less extent, this increase being especially striking in 1877.

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(unit of *yen*).

Year.	Amount of Interest-Bearing Debts Remaining at the End of Year.	Yearly Amount of Interest.	Interest per 100 *yen* of Unredeemed Debts.	Interest per Capita.
1871...	4,880,000	439,200.000	9.000	.013
1872...	17,302,825	936,113.000	5.410	.028
1873...	30,107,024	1,806,845.000	6.001	.054
1874...	36,605,275	2,309,158.000	6.308	.068
1875...	45,715,285	2,050,853.200	6.674	.089
1876...	44,051,891	2,934,057.120	6.660	.085
1877...	226,684,391	14,917,887.220	6.581	.427
1878	242,927,622	15,809,583.040	6.508	.442
1879...	240,981,670	15,658,136.400	6.498	.436
1880...	240,340,590	15,558,088.720	6.473	.428
1881	237,349,361	15,315,594.520	6.453	.417
1882...	241,952,558	14,898,672.660	6.158	.402
1883...	229,323,618	14,309,761.310	6.240	.382
1884	231,742,097	15,105,274.790	6.518	.399
1885	233,355,625	15,111,262.200	6.476	.396
1886..	249,801,407	15,530,584.940	6.217	.403
1887...	257,931,129	15,370,909.780	5.959	.393
1888	252,826,821	14,726,657.670	5.825	.372
1889...	253,030,672	14,285,742.540	5.646	.357
1890	246,433,580	13,758,211.400	5.583	.340
1891...	246,042,374	13,342,664.980	5.423	.328
1892...	249,530,131	12,966,631.820	5.196	.316
1893...	238,670,125	12,157,348.100	5.094	.294
1894...	255,310,782	13,116,248.840	5.137	.314
1895...	364,418,078	18,656,661.060	5.120	.441
1896...	399,635,572	18,586,453.640	4.651	.435
1897...	377,686,220	18,884,311.000	5.000	.413
1898...	386,234,420	19,311,721.000	5.000	.418
1899...	476,372,650	22,892,332.500	4.806	.488
1900...	500,055,650	24,345,482.500	4.869	.513
1901...	547,575,950	28,244,597.500	5.158	.595
1902...	269,473,890	28,670,994.500	4.929	.591

Classification of National Debts.—The national debts incurred by the Government since the beginning of the era amount to a large sum, as mentioned in the preceding parts. But it must not be forgotten that all those debts have generally been occasioned by the reorganization of the national institutions, the adjustment of the finances, and the development of civil and military affairs. None of them have been engendered by deficit in the ordinary revenue of the State. It is true some debts have been contracted by war, but their sum is comparatively small. This point will be made clear by the following table in which the debts, (Exchequer bonds and temporary loans excluded), are classified according to the object for which they were raised.

(unit of *yen*).

	Object of Debt.	Name of Loan.	Amount Raised.	Amount Redeemed.	Amount not yet Redeemed.
Reorganization of Public Institutions.	Feudal Governments' Debts Consolidated.	New Loan	12,422,825	12,422,825	—
		Old Loan...	10,972,725	6,803,089	4,169,636
		Total	23,395,550	19,225,915	4,169,636
	Feudal Pensions Capitalized.	7 per cent. Foreign Loan.	11,712,000	11,712,000	—
		Capitalized Pension Loan.	16,565,850	16,565,850	—
		Pension Loan	173,902,900	149,774,010	24,128,890
		The Old Shintō Priest Pension Loan	334,050	334,050	—
		Total	202,514,800	178,385,910	24,128,890
		Grand Total ...	225,910,350	197,611,825	28,298,526
Economic Undertakings.	Railroad Construction.	9 per cent. Foreign Loan.	4,880,000	4,880,000	—
		Public Works Loan ...	5,694,300	5,694,300	—
		Nakasendō Railroad Loan.	20,000,000	20,000,000	—
		Railroad Sup'tary Loan...	2,000,000	2,000,000	—
		Railroad Loan...	62,559,500	13,728,050	48,831,450
		Public Undertaking Loan.	24,431,400	1,990,750	22,440,800
		Hokkaidō Railroad Loan.	4,912,000	—	4,912,000
		Total	124,477,350	48,293,100	76,184,250
	Harbor-Works, Artificial Canal, Road, Mining, Telephone, etc.	Public Works Loan ...	6,805,700	6,805,700	—
		Public Undertaking Loan.	30,873,450	2,515,650	28,357,800
		Total	37,679,150	9,321,350	28,357,800
		Grand Total ...	162,156,500	57,614,450	104,542,050

	Object of Debt.	Name of Loan.	Amount Raised.	Amount Redeemed.	Amount not yet Redeemed.
Military Affairs.	Expansion of Armament.	Naval Loan	17,000,000	8,203,400	8,796,600
		Public Works Loan ...	77,458,900	6,311,550	71,147,350
		Total	94,458,900	14,514,950	79,943,950
	War.	Civil War Loan	15,000,000	15,000,000	—
		War Loans	124,920,750	9,112,700	115,808,050
		Total	139,920,750	24,112,700	115,808,050
		Grand total... ...	234,379,650	38,627,650	195,752,000
Financial Adjustment.	Redemption of Paper Money.	Kinsatsu Exchange Loan.	6,669,250	6,669,250	—
		Unregistered Kinsatsu Exchange Loan	7,929,900	7,929,900	—
		Redemption of Paper Money	22,000,000	—	22,000,000
		Total	36,599,150	14,599,150	22,000,000
	Consolidation of Old Loans.	Consolidated Loan... ...	175,000,000	7,663,550	167,336,450
	Tobacco Monopoly.	Public Undertaking Loan.	12,213,550	995,200	11,218,350
		Total	223,812,700	23,257,900	200,554,800
Exploitation of New Territory.		Railroad	7,722,350	—	7,722,350
		Land Surveying	1,274,550	—	1,274,500
		Harbor-Work	1,462,000	—	1,462,000
		Construction of Government Offices	787,250	—	787,250
		Total	11,246,150	—	11,246,150
		Grand Total... ...	857,505,350	317,111,825	540,393,525

Ratio of Different Kinds of Debts.

It will be seen from the foregoing table that the national debts incurred for military purposes number four, the amount of their loans corresponding to less than 27.3 per cent. of the whole sum (the debt incurred for civil wars corresponds to only 16.3 per cent. approximately), and this item therefore is the largest; then come the debts incurred for the reorganization of public institutions. These debts number six and their aggregate amount

corresponds to about 27.1 per cent. of the whole sum, and therefore almost equal to the item above mentioned. The five debts resulting from the financial adjustment measures correspond to about 26.7 per cent., a ratio differing much from the preceding two. The debts which economic undertakings occasioned are the largest as to number, though their aggregate sum does not exceed about 18.2 per cent. of the whole amount. There is only one raised for the purpose of exploiting the new territory of the Empire, and its amount does not exceed .7 per cent., and is therefore the smallest item of all. The two items of economic undertakings and the exploitation of the new territory are, however, destined to grow larger with the lapse of time. Coming to the ratio which each item of redemption bears to the aggregate amount redeemed, that ratio is in the case of the financial adjustment amount to about 38.4 per cent., in the case of the military item about 36.6 per cent., economic undertakings about 18.3 per cent., reorganization of public institutions about 5.7 per cent., and the exploitation of the new territory about 1 per cent.

Ratio of Loans Raised and Redeemed.

The amount of loans, of redemption, and of the sum not yet redeemed being classified according to foreign and domestic debts, the following figures are obtained:—

Kind.	Amount of Loan.	Amount Redeemed.	Amount not yet Redeemed.
Domestic	743,283,350	300,519,824	442,763,526
Foreign	114,220,000	16,592,000	97,630,000
Total	857,505,350	317,111,825	540,393,525

Ratio of Interest-Bearing Loans and Those not Bearing Interest.

Furthur classification being made into those bearing interest and those not bearing interest and also into those that have issued bonds and those that have not, the following comparison is obtained:—

INTEREST-BEARING.

Kind.	Amount of Loan.	Amount Redeemed.	Amount not yet Redeemed.
Those that have Issued Negotiable Bonds (Public Loans)	809,532,625	295,308,735	514,223,894
Those that have not Issued Negotiable Bonds (Temporary Loans) ..	15,000,000	15,000,000	—
Toial	824,532,625	310,308,735	514,223,890

NOT BEARING INTEREST.

Those that have Issued Negotiable Bonds (Public Loans)	10,972,725	6,803,090	4,169,636
Those that have not Issued Negotiable Bonds (Temporary Loans)...	22,000,000	—	22,000,000
Tatal	32,972,725	6,803,090	26,169,636

TOTAL.

Those that have Issued Negotiable Bonds (Public Loans)	820,505,350	302,111,825	518,393,526
Those that have not Issued Negotiable Bonds (Temporary Loans)...	37,000,000	15,000,000	22,000,000
Total	857,505,350	317,111,825	540,393,526

Lastly the debts shall be classified according to the presence or absence of interest and according to the rate of interest.

%	Name of Loan.	Amount of Loan.	Amount Redeemnd.	Amount not yet Redeemed.
10	Voluntary Pension Loan	9,244,005	9,244,005	—
9	9-per cent. Foreign Loan	4,880,000	4,880,000	—
8	Capitalized Pension Loan	16,565,850	16,565,850	—
	Old Shinto Priests Pension Loan ...	334,050	334,050	—
	Total	16,899,900	16,899,900	—
7½	Civil War Loan	10,000,000	10,000,000	—
7	7-per cent. Foreign Loan	11,712,000	11,712,000	—
	Capitalized Pension Loan	108,242,785	108,246,785	—
	Nakasendō Railroad Loan	20,000,000	20,000,000	—
	Total	139,954,785	139,954,785	—
6	Kinsatsu Exchange Loan	6,669,250	6,669,250	—
	Capitalized Pension Loan...	25,003,705	25,003,705	—
	Public works Loan	12,500,000	12,500,000	—
	Unregistered Kinsatsu Exchange Loan	7,929,900	7,927,900	—
	Total	52,102,855	52,102,855	—
5	Capitalized Pension Loan	31,412,405	7,283,515	24,128,890
	Civil War Loan	5,000,000	5,000,000	—
	Naval Loan	17,000,000	8,203,400	8,796,600
	Consolidated Loan	175,000,000	7,663,550	167,336,450
	Railroad supplementary Loan	2,000,000	2,000,000	—
	Railroad Loan	44,981,750	13,728,050	31,253,700
	War Loan	124,920,750	9,112,700	115,808,050
	Public Undertaking Loan	66,925,200	11,813,150	55,112,050
	Hokkaidō Railroad Loan	2,912,000	—	2,912,000
	Formosan Undertaking Loan	11,246,150	—	11,246,150
	Total	481,398,255	64,804,365	416,593,890
4	New Loan	12,422,825	12,422,825	—
	Railroad Loan	17,577,750	—	17,577,750
	Public Undertaking Loan	78,052,250	—	78,052,250
	Hokkaidō Railroad Loan	2,000,000	—	2,000,000
	Total	110,052,725	12,422,825	97,630,000
No Interest	Old Loan	10,972,725	6,803,090	4,169,636
	Paper Money Redemption Loan ...	22,000,000	—	22,000,000
	Total	32,972,735	6,803,089	26,169,636
	Grand Total...	857,505,350	317,111,825	540,393,526

Note:—That portion of the South-Western Civil War Loan which had been paid off in 1883 when the rate of interest was revised was included in the item of the old rate of interest, and the remainder in that of the new rate.

II. LOCAL DEBTS.

As already mentioned, the debts contracted by the feudal princes were converted into the public loans of the Imperial Government and were thus brought under a uniform system. For a considerable period from the advent of the Imperial régime local loans were practically non-existent, nor were there any regular rules in force to regulate this branch of local finance. It was as late as 1890, when the local Government system had been completed, that regular provisions relating to local loans were enacted for the first time.

First Lo al Loans.

According to the provisions now in force, the prefectural and communal corporations are allowed to raise loans only for the purpose of redeeming older debts or when it is impossible to meet with the ordinary revenue extraordinary disbursements occasioned by natural calamities or similar occurrences of an unavoidable nature or by undertakings judged to confer a permanent benefit on the corporations. But a loan cannot be raised unless the details relating to it have been voted by the legislative organ of the corporation and unless such decision has been approved by the Ministers of Home Affairs and of Finance. However this restrictive provision may not apply to short-termed loans redeemable in not more than three years

Objects of Local Loans.

Though local loans are subject to such restrictions, the development of the self-government system and the expansion of local expenditure occasion disbursements which can not be easily met out of the ordinary revenue. Then again the frequent occurrences of calamities and disasters have further obliged the prefectures and corporative bodies to resort to loan expedients, and the result has been that the local loans have attained enormous proportions. The supervising authorities are exercising the utmost care to put a judicious check on this tendency.

STATISTICS RELATING TO LOCAL LOANS.

Table I.—Existing Amount of Local Loans.

(unit of *yen*).

At the End of Year.	Loans of Prefectures.	Loans of Districts.	Loans of Cities.	Loans of Towns and Villages.
1890	570,301	—	150,000	—
1891	1,263,481	—	863,112	1,652
1892	1,295,155	—	2,961,419	16,609
1893	1,529,507	—	7,501,644	19,232
1894	2,281,511	3,000	7,529,760	120,574
1895	2,209,945	2,500	7,820,960	128,241
1896	2,204,854	6,200	8,019,596	163,173
1897	4,500,149	21,479	8,732,123	236,921
1898	7,885,203	45,729	11,501,480	383,386
1899	8,672,641	62,646	14,676,755	491,949
1900	9,719,984	135,613	18,889,033	829,498
1901	10,379,695	339,348	19,263,663	1,514,455

At the End of Year	Loans of Local Associations.	Total.	Local Loans Redeemable within 3 Years.	Grand Total.
1890	—	720,301	—	720,301
1891	—	2,128,245	—	2,128,245
1892	6,508	4,279,692	—	4,279,692
1893	43,418	9,093,801	—	9,093,801
1894	126,408	10,061,253	—	10,061,253
1895	138,289	10,299,934	—	10,299,934
1896	124,589	10,518,414	—	10,518,414
1897	247,489	13,738,162	2,614,652	16,352,814
1898	448,682	20,264,480	3,219,517	23,483,997
1899	724,308	24,628,299	3,629,904	28,258,204
1900	1,195,345	30,769,473	5,010,447	35,779,921
1901	1,687,674	33,187,806	7,520,166	40,707,972

TABLE II.—AGGREGATE AMOUNT OF LOCAL LOANS.

(unit of *yen.*)

	Total of Existing Amount.	Increase Compared with Preceding Year.	Rate of Increase.
1890	720,301	—	—
1891	2,128,245	1,407,943	1.955
1892	4,279,692	2,151,447	1.011
1893	9,093,801	4,814,109	1.125
1894	10,061,253	967,451	.106
1895	10,299,934	238,681	.024
1896	10,518,414	218,480	.021
1897	16,352,814	5,834,400	.555
1898	23,483,997	7,131,182	.436
1899	28,258,204	4,774,206	.203
1900	35,779,921	7,521,717	.266
1901	40,707,972	4,928,051	.137

TABLE III.—CLASSIFFICATION OF LOCAL LOANS EXISTING IN 1901.

(unit of *yen.*)

	Education.	Sanitary.	Public Works.	Industry.	Redemption of Old Loans.	Total.
Prefectural...	745,952	—	9,599,312	34,400	—	10,379,664
District	130,770	—	93,437	106,000	9,141	339,348
City	312,210	7,500	18,919,651	—	24,297	19,263,662
Town and village ...	435,720	9,734	633,109	324,907	112,970	1,517,449
Association...	—	900	1,585,655	12,490	88,628	1,687,673
Total...	1,624,656	18,134	30,832,164	477,797	235,045	33,187,796
At the end of 1900 ...	336,456	86,740	29,851,443	285,941	208,892	30,769,473
1899	232,295	85,480	23,999,226	170,444	140,852	24,628,299
1898	204,787	85,720	19,738,000	85,045	150,927	20,264,480
1897	105,395	37,540	13,490,746	75,045	29,434	13,738,161
1896	43,033	40,400	10,351,700	75,545	7,734	10,518,414
1895	25,316	2,600	10,187,912	75,545	8,559	10,299,934
1894	23,378	4,000	9,953,790	75,545	5,040	10,061,253
1893	9,881	4,000	9,078,300	—	1,620	9,093,801

CHAPTER V.—Currency System.

Existing System and its History—Effect of the Coinage System on the Finance and Economy of the Country.

I. EXISTING SYSTEM AND ITS HISTORY.

Gold Coinage System.—The existing currency system is based on the Coinage System promulgated in the year 1897, and which ushered in the gold standard in this country. The principal points in the currency system are these :—

1. The unit of the coinage shall be 2 *fun* of pure gold (11.574 grains), and shall be one half the value of the old gold unit.
2. The gold coins shall be of three denominations, 5 *yen* coins, 10 *yen* coins, and 20 *yen* coins, and the gold coins issued under the old coinage law shall have double the value of the coins of corresponding denominations issued under the new coinage law.
3. Subsidiary silver pices shall be of three denominations, 10 *sen* pieces, 20 *sen* pieces, and 50 *sen* pieces. The 5 *sen* silver pieces issued under the old coinage system shall remain in circulation as before.
4. Subsidiary copper coins shall be of three denominations, 5-*sen* nickel pieces, 1-*sen* copper pieces and 5-*rin* copper pieces. The 2-*sen* pieces, 1-*sen* pieces, 5-*rin* and 1-*rin* pieces, issued before shall continue in circulation as before.
5. The circulation of 1 *yen* silver coin that was used as legal tender to any amount at the rate of 1 *yen* gold piece was prohibited on April 1, 1898, and its withdrawal from circulation was effected on July 31st of the same year.

A brief history of the development of the existing monetary system shall be described in the following paragraphs.

FIRST PERIOD.

One of the first things which the Imperial Government attempted in the way of internal reform was to unify the currency system with the object of securing its stability. The promulgation of the New Coinage Regulations in 1871 first laid the basis of a sound monetary system. The regulations adopted 1 *yen* gold piece weighing 23.15 grains as the unit of standard, and minted 2 *yen*, 5 *yen*, 10 *yen*, and 20 *yen* pieces. Subsidiary coins consisted of silver and copper pieces, the former being of four denominations of 5-*sen*, 10-*sen*, 20-*sen* and 50-*sen* and the other also of four denominations, 1-*rin* 5-*rin* 1-*sen*, 2-*sen* (5-*sen* nickel pieces were first minted in 1889.) At the same time the Government issued 1-*yen* silver coin equal in weight and quality to the Mexican dollars that were circulating extensively at that time in the Far East. The 1-*yen* coins called "trade dollar" having been issued to serve the convenience of merchants engaged in foreign trade, they were acceptable only within the limits of the treaty ports. The relative value of the 1-*yen* silver pieces was fixed at the rate of 100 silver *yen* to 101 gold *yen*, that is to say at the rate of 1 of gold to about 16.014 of silver. (By Notification issued in 1876, 100 *yen* in silver coins was made equal in value to 100 *yen* in gold, the rate being 1 of gold to about 16.174 of silver.)

First Coinage Regulation

Trade "Dollar"

SECOND PERIOD.

The gold mono-metallism that was adopted early in the era began to be seriously affected from about 1873, when the gold price of of silver fell very considerably in Europe and America, so that whereas at first the relative value was 1 of gold to 16 of silver, it fell to one of gold to 19 or 20 of silver. Situated as Japan was in the midst of silver using countries, it was decided, for the sake of promoting transactions with those countries, to make the trade dollar legal tender throughout the country and to allow it to be circulated to any amount side by side with the gold coins. In conse-

Reduced to Bi-Metallism.

quence of this new arrangement put in force in 1878, the monetary system of Japan was no longer gold mono-metallism, but was changed to a system of gold and silver bi-metallism.

THIRD PERIOD.

The paper notes issued by the Treasury in 1868 were a result of imperious necessity of meeting the various urgent calls of expenditure occasioned by the inauguration of the new Government. At first they were convertible notes, but coming to 1871, they began to suffer depreciation. A similar remark applies to the bank notes issued in virtue of the Notional Bank Regulations promulgated in 1872. They were at first convertible into specie, but when in 1876 the Regulations were amended to the effect that the bank notes were convertible into inconvertible Treasury notes, they were brought down to the same level of inconvertibility as the other kind of notes. Though those notes were reduced to that unlucky position, the evil resulting therefrom was not yet serious, owing to the fact that the amount of the two kinds of notes was still comparatively small. The outbreak of the South-Western Civil war in 1877 and the issue of 27 million *yen* at one time by the Government and also the issue of no small amount by the banks at once inflated the volume of inconvertible notes. This tendency was further accelerated, for as a result of amendment of the National Bank Regulations in 1876 the creation of new banks followed in quick succession. At the end of 1879 therefore the volume of inconvertible paper money swelled to as much as 34,000,000 *yen*. The evil effect of this condition of the currency soon began to make itself felt in every direction; the price of commodities rose rapidly, specie left the country, the imports continued to exceed the exports, public bonds continued to come down to an alarming extent, and in short it seriously impaired the prosperity of trade and industry.

Paper and Bank Notes.

The Government adopted measures calculated to remedy this disastrous state of affairs. From 1880 systematic efforts were made to accomplish this adjustment, and to redeem the paper money. In pursuance of that resolution the Government began to hoard specie. Coming to 1883 we find

Currency Adjustment.

that it amended the National Bank Regulations. It afterwards caused the banks to deposit specie reserves with the Bank of Japan that had been established in 1884, and this central bank was made to issue convertible notes on the bases of the specie reserves it had in its vault.

Issue of Convertible Notes.

The redemption of the inconvertible notes and the issue of convertible notes to take their place reduced the volume of notes in circulation, and restored their value to par. At the same time the exodus of specie was stopped, trade revived, prices and the rate of interest fell, and the market and industry began to recover their normal state of activity. Meanwhile the specie reserves against Government notes went on accumulating, so that the Government was in the position in June of 1885, to give notice that specie payment would be resumed from January 1886 and that the inconvertible notes would be redeemed with silver specie. Thus the important object of financial adjustment was at last realized.

Government Notes.

The circulation of Government notes was prohibited not later than December 31st of 1899, while that of bank notes was similarly prohibited on December 9th of the same year. It was announced at the same time that during the five years after the notice of withdrawal from circulation a holder of those notes would be entitled to have them exchanged for convertible legal notes. This period has not yet come to an end.

FOURTH PERIOD.

Practically Silver Mono-Metallism.

With the redemption of paper money by silver after 1886 and the placing of paper on par with silver, the monetary system of Japan, though theoretically a bi-metallic system, practically became one of silver. Though this financial state was an outcome of unavoidable circumstances, this change of the gold mono-metallic system into a silver standard system proved highly disastrous for our country. For the fall of silver that began to take place about 1877 kept on at greater rate, and was still more accelerated owing to the conversion of many silver countries into gold countries.

It is true that the United States of America made an attempt to check this downward course by adopting the Sherman act and by convening an International Monetary System Conference. These efforts ended in a failure and the fall continued with unabated force.

This movement of the silver market inflicted no small injuries on our national economy, so that the Government at last decided to institute inquiries into the question of monetary standard, and appointed in 1892 a commission charged with this special task. The commission was composed of officials of the Departments of State concerend with this affair as well as of economists and business-men at large. The points which the commission were asked to deliberate on and discuss were, (1) the causes of the recent fluctuation in the price of gold and silver, and their general effect; (2) the effect of those fluctuations on the economic condition of the country; (3) whether, in view of these fluctuations, there was any need of making a change in the coinage system of the country, and if so what system ought to be adopted, and what measures should be taken for effecting that change. The commission sat for about two years, and after having made careful investigations into the subject came to the conclusion that our coinage system required a change, and that the change should be the adoption of the gold standard. The Government, however, had at that time no fund at its disposal to enable it to carry out this decision of the commission. Fortunately the Japan-China war and the indemnity paid by China enabled the Government to procure that fund.

Investigation into Monetary Systems.

FIFTH PERIOD.

This Indemnity reached Japan at a very opportune moment so far as the change of the coinage system was concerned, for it came just when the Government, impelled by necessity, was thinking of carrying out the change just referred to and when the time for making that change had in fact come. Determined to effect this important monetary change, the Government introduced in 1897 the Coinage Bill to the Diet. The bill with the approval of both Houses, was passed in March of the same year, and put in force on

Inauguration of Gold System.

October 1st of the same year, as briefly described at the beginning of this chapter.

As soon as the adoption of a gold standard had been decided upon, the Government began purchasing abroad gold bullion with part of the Indemnity, and the bullion brought home was handed over to the Imperial Mint with instruction to stamp the gold coins with the greatest possible speed. The Mint attended to the work with great energy, and minted over 76,000,000 *yen* gold coins from July 30th to April of the following year.

II. EFFECT OF THE COINAGE REFORM ON THE FINANCE AND ECONOMY OF THE COUNTRY.

General Remarks.—As only not more than six years have elapsed since the putting in operation of the new coinage system, it is not yet possible to define with any precision the effects which the new system has had upon the economic condition of the country. There have been, moreover, other accidental causes in operation since that time, such as, for example, the abnormal influence exerted on our economical system by the sudden expansion of Government and private enterprises after the Japan-China War, the outbreak of the North China trouble, the failure of the rich crop, the coming into operation of the revised tariff laws, etc.

Benefit of the new Currency System.—All those things have tended to complicate the economic condition of the country, rendering it extremly difficult to point out in any clear manner the effects attending the adoption of the gold standard. However the result of the new coinage system may be broadly stated, in the following paragraphs:—

Stability of Currency System.

The adoption of the gold standard has placed our currency system on a firm basis and relieved it from those fluctuations that had constantly disturbed the market while it rested on silver basis. Not only did these fluctuations always affect the standard of price, but they also placed our currency system in a position of great insecurity, inasmuch as the specie

reserves against convertible notes of the Bank of Japan, which principally consisted of silver, constantly fluctuated in price. The adoption of the gold standard has rendered the basis of the currency system stable and firm, as it has made the standard of price secure and free from fluctuations. Had Japan remained to be a silver country, her credit among the gold countries now that the price of silver has steadily gone down, would have fallen in value on the other hand, while her liabilities would have increased. The result would have manifested itself in the exodus of specie, and the weakening of the stability of the convertible system, even to the extent of imperilling the security of the monetary system. From all those risks and also from other unexpected risks incidental to them, the country has been exempted, thanks to the adoption of the gold standard.

Smooth Operation of Commercial Transactions.

The change of the coinage system, while it did not disturb the relation of creditors and debtors that had existed, has rendered that relation one of greater security and therefore has tended to facilitate the smooth operation of commercial transactions. The reason why the change of the coinage system has not disturbed the relation that had existed between creditors and debtors, is not far to seek. It will be remembered that, prior to that change, the legal relative value of gold and silver was at the rate of one of gold to 16.174 of silver. But in actual price the rate stood at 1 to 31 to 35, and the transactions were carried on the standard of silver. The new coinage system reduced by one half the weight of gold in the 1-*yen* gold pieces and 2 *fun* (11.574 grains) was fixed on as the weight of a 1-*yen* gold piece. In other words, ratio of gold to silver became to bear the ratio of 1 to 32.348. The consequence was that the only change that attended the adoption of the standard consisted in the transfer of the standard of price from silver to gold, and that the actual one-*yen* standard remained unchanged.

While the silver system was in force, the fluctuation in the price of silver constantly affected the interests of creditors

and debtors. The sense of insecurity which the people naturally felt owing to that cause very much obstructed business transactions, while on the other hand this insecurity imparted to those transactions a feature of speculation. All these things did not fail to seriously affect our social economy. By the adoption of the gold standard the evils of insecure relation between creditors and debtors and the obstructions standing in the way of transactions have been removed, and the system of credit has been encouraged and developed.

Market Prices of Commodities.

The prices are no longer influenced by the fluctuations of the price of silver, and are therefore prevented from making any undue advance. Owing to the stability of the standard of value in consequence of the adoption of the gold standard, any fluctuations affecting the market prices of commodities are regulated by the normal relation of supply and demand, and therefore the complicating feature incidental to the constant changes of the price of silver has been eliminated from the market. If any relation exists even to-day between the currency and the prices of commodities, that is solely attributable to the volume of the former, and the changes arising from the changes in the value of the currency have entirely disappeared. This stability in the standard of value has, it is hardly necessary to point out, introduced order and system into business transactions, both domestic and foreign. It is easy to conceive how, had Japan still remained a silver country, the market prices of commodities, now that the price of silver is steadily declining, would have been far higher than at present, and how, in foreign trade, imports would have always exceeded exports. Salaried people would be placed in a very unfortunate position, for their earnings would lose more or less of their purchasing value and the amount of the salaries and wages would be merely nominal. Moreover the presence of the silver standard would seriously hamper the rise of legitimate and useful enterprises. Thanks to the adoption of the gold standard Japan has escaped from all those causes of evils.

Financial Measures and Economic Undertakings.

The new coinage system has placed financial measures and useful undertakings on a sound basis. Since the adoption of the gold system and since the standard of value has been made stable and secure, it has been possible, on the one hand, to render all the financial measures of the Government sound and free from unexpected changes, and on the other to place tradal and industrial enterprises on a similarly sound basis. In short those enterprises are freed from risks of unexpected changes and dangers of miscalculations inseparable from the varying changes of the value of silver.

Exchange with Gold-using Countries.

The exchange business with gold-using countries has been made stable and the sound development of foreign trade has been secured by the new coinage system. The trade with silver-using countries has also advanced satisfactorily, instead of being subjected to any difficulties. Indeed the exchange rate with gold-using countries has been made practically stable, and free from all those sudden changes that frequently appeared formerly. The result has been a powerful and healthy stimulus to the development of our trade with gold-countries.

During the four years prior to the carrying into effect of the gold standard, that is from 1893 to 1896 inclusive, the imports from gold-using countries averaged 74,500,000 *yen* a year. The average during the five years commencing 1898 when the gold system was established amounted to 144,500,000 *yen* being about double the former average. Further, the average of Japanese exports to gold-using countries during the four years and the five years both specified above, was 74,800,000 and 117,500,000 *yen* respectively, showing an advance of over 57 per cent. The trade with silver-using countries, in spite of the presence of deterring influences in the shape of the constant fluctuations of the silver market, has also shown a prosperous condition, probably owing to the development of our productive enterprise, of the means of transportation, and of the increase of the foreign

demand for our goods. During the first four years in question the imports from the principal silver countries averaged 35,700,000 *yen*, against the corresponding figure of 61,200,000 *yen* for the other five years, an increase of about 71 per cent. In exports to those countries the average that stood at 30,300,000 *yen* in the first period advanced to 83,000,000 *yen*, an increase of over 174 per cent.

Effect of Foreign Payments.

The advantage which the new coinage system confers on Japan in connection with her foreign payments is not small. This is indeed an important thing when it is remembered that Japan's creditors are principally gold-using countries, so that Japan, had she remained as a silver country, would have to pay in the ever-fluctuating silver the principle and interest of her foreign loans, the price of her purchases, travelling-expense, etc. Not to speak of the great uncertainty in transactions and the great inconvenience in remittance, the loss which Japan would have to incur on that account would not be small. For instance, for one and the same amount of liabilities, absolutely speaking, Japan would have to bear in that case a heavier burden. From all these evils Japan has been relieved by the adoption of the gold standard.

Closer Economic Relation with Foreign Countries.

The benefit of international community in economic affairs has been established by the new coinage system, for it cannot be denied that of all the various devices that may be made use of for bringing different countries into closer economic relation with each other, the identity of the coinage system constitutes the most potent cause. Now as a result of the adoption of the gold standard, Japan's money market has been brought directly into touch with the central markets of the world. The closer relation thus brought about has led to the capital of other gold countries flowing into this country and contributing to the development of its economic enterprises. The loans raised by Japan in London or the bonds issued there have induced European and American capitalists to constantly invest their money in our loan bonds, which have

therefore began to be regularly quoted on the London market, the amount of transaction showing a steady increase. Again, foreign capitalists have become willing to supply municipal loans or loans of business concerns, and they are also disposed to invest in various undertakings of Japan. This circumstance may partly be due to the actual state of our trade and manufacture having become better known among foreign capitalists, but it can not be denied that it is principally a result of the adoption of the gold standard in our country and to the removal of various obstacles that formerly stood in the way of the introduction of foreign capital.

As briefly enumerated above, the result of the adoption of the gold mono-metallism has been far-reaching, for while it has placed our monetary system on a firm and sound basis and has promoted our financial and economic stability and sound development, it has enhanced the credit of the country in the world's markets. The truth of the foregoing remarks will be further demonstrated by the appended tables, returns about exports and imports being referred to the chapter of Trade.

AMOUNT OF COINS AND PAPER MONEY IN CIRCULATION.

(unit of *yen*).

AMOUNT OF COINS.

At the end of Dec.	Gold Coins.	Silver Coins (1 *yen*).	Subsidiary Silver Coins.	Subsidiary Copper Coins (Nickel Coins included).	Total.
1868	—	—	—	—	—
1869	—	—	—	—	—
1870	—	—	—	—	—
1871	2,666,639	2,740,245	1,409,331	5,624,603	12,440,818
1872	26,160,931	3,663,334	3,858,526	5,624,603	39,307,394

At the end of Dec.	Gold Coins.	Silver Coins (1 *yen*).	Subsidiary Silver Coins.	Subsidiary Copper Coins (Nickel Coins included).	Total.
1873	43,551,184	3,663,334	7,597,453	5,634,318	60,446,289
1874	39,711,743	4,572,401	8,764,775	6,059,964	59,108,883
1875	32,316,939	4,478,033	9,610,291	6,933,898	53,339,161
1876	29,840,204	6,140,056	12,868,301	7,952,201	56,880,762
1877	25,740,862	5,869,485	15,546,649	6,034,018	56,191,014
1878	23,227,198	6,423,124	16,912,550	9,734,404	56,297,276
1879 ...	19,822,836	7,383,620	14,158,987	10,191,861	51,557,304
1880	14,929,448	9,442,914	9,589,113	10,665,859	44,627,334
1981	13,696,639	9,367,593	8,135,836	11,240,608	42,440,676
1882	13,049,148	13,842,648	7,499,259	12,231,164	46,622,219
1883	12,655,270	17,195,954	7,301,312	13,168,768	50,351,304
1884	11,997,820	20,138,400	7,263,039	14,182,618	53,581,877
1885	12,555,240	22,413,577	9,252,885	14,755,568	58,977,270
1886	13,287,556	24,086,570	9,253,031	15,078,536	61,705,693
1887	14,110,861	22,015,114	11,244,581	14,912,627	62,283,183
1888	14,688,827	26,179,766	11,982,799	14,799,247	67,650,639
1389	16,355,760	31,673,733	12,194,949	13,485,114	73,909,556
1890	16,271,829	27,361,663	12,192,756	14,864,425	70,690,673
1891	17,208,066	35,383,284	13,192,519	14,692,121	80,475,990
1892	12,209,757	46,921,639	14,301,597	14,835,144	88,368,138
1893	12,236,519	52,124,353	16,188,905	15,020,757	95,570,534
1894	11,957,378	46,292,212	18,170,550	15,506,679	91,926,819
1895	12,254,526	47,192,176	20,751,998	15,490,366	95,689,066
1896	12,811,389	50,977,504	23,228,777	15,521,101	102,538,771
1897	79,899,898	31,048,987	29,395,940	16,093,962	156,438,788
1898	83,648,655	—	45,814,139	16,992,185	146,454,979
1899	93,360,986	—	54,610,031	17,504,068	165,475,085
1900	52,930,394	—	57,118,376	17,446,096	127,494,866
1901	59,342,303	—	58,298,490	17,758,238	135,399,031
1902	89,247,908	—	59,177,328	17,921,896	166,347,134

At the end of Dec.	Amount of Paper Money Issued.				Amount of Coins and Paper in Circulation.
	Government Paper Money.	Notional Bank Notes.	Convertible Bank Notes.	Total.	
1868	24,037,390	—	—	24,037,390	24,037,390
1869	50,090,867	—	—	50,090,867	50,090,867
1870	55,500,000	—	—	55,500,000	55,500,000
1871	60,272,000	—	—	60,272,000	72,712,818
1872	68,400,000	—	—	68,400,000	107,707,394
1873	78,381,014	1,362,210	—	79,743,224	140,189,513
1874	91,902,304	1,995,000	—	93,897,304	153,006,187
1875	99,071,870	1,420,000	—	100,491,870	153,831,031
1876	105,147,583	1,744,000	—	106,891,583	163,692,345
1877	105,797,092	13,352,751	—	119,149,843	175,340,857
1878	139,418,592	26,379,006	—	165,697,598	221,994,874
1879	130,308,921	34,046,014	—	164,354,935	215,912,239
1880	124,940,486	34,426,351	—	159,366,837	203,994,171
1881	118,905,195	34,396,818	—	153,302,013	195,742,689
1882	109,369,014	34,385,349	—	143,754,363	190,376,582
1883	97,999,277	34,275,736	—	132,275,013	182,626,317
1884	93,380,234	31,015,942	—	124,396,176	177,978,053
1885	88,345,096	30,155,389	3,956,161	122,456,646	178,122,455
1886	67,800,846	29,501,485	39,549,815	136,852,146	174,935,831
1887	55,815,045	28,604,133	53,454,803	137,873,981	169,160,489
1888	46,734,741	27,679,657	65,770,580	140,184,978	177,519,246
1889	40,913,035	26,739,205	79,108,652	146,760,892	188,634,493
1890	33,272,715	25,810,720	102,931,766	162,015,201	205,408,438
1891	27,886,721	24,869,508	115,734,545	168,490,774	210,872,584
1892	20,828,245	23,890,510	125,843,363	170,562,118	216,786,121
1893	16,407,000	22,756,119	148,663,128	187,826,247	238,498,319
1894	13,404,547	21,781,796	149,813,700	185,000,043	247,711,285
1895	11,129,224	20,796,786	180,336,815	212,262,825	282,000,811
1896	9,376,172	16,497,889	198,313,896	224,187,957	300,373,686
1897	7,451,098	5,024,729	226,229,058	238,704,885	330,470,142
1898	5,411,726	1,866,563	197,399,901	204,678,190	285,619,698
1899	4,125,783	981,608	250,562,040	255,669,461	337,809,481
1900	1,767,814	483,933	228,570,032	230,821,779	320,282,135
1901	1,609,772	449,320	214,096,766	216,155,858	308,766,069
1902	1,551,791	431,576	232,094,377	234,078,744	326,572,380

Note:—As the Government notes with drawn from circulation from December 31st, 1899, and the bank notes from December 9th, 1899, are allowed redemption within five years from the respective dates, the amount of the two notes judged to remain on the market is included in the table.

EXPORTS TO GOLD STANDARD COUNTRIES.

(unit of *yen*).

Year.	United States of America.	Great Britain.	France.	Germany.	Belgium.	British America.
1893... ...	27,739,458	4,995,974	19,531,975	1,380,040	226,284	1,720,559
1894... ...	43,323,557	5,950,198	19,498,776	1,517,549	19,480	2,211,687
1895... ...	54,028,950	7,883,091	22,006,386	3,340,013	131,944	1,986,169
1896... ...	31,532,341	9,012,398	19,027,389	2,972,137	111,467	1,594,045
1897... ...	52,436,404	8,481,196	26,213,654	2,207,018	109,312	2,054,620
1898... ...	47,311,155	7,783,643	20,596,407	2,469,242	101,164	2,265,620
1899... ...	63,919,270	11,270,770	29,247,837	3,796,927	331,415	2,358,099
1900... ...	52,566,396	11,262,997	19,150,423	3,556,613	296,512	2,950,662
1901... ...	72,309,359	11,482,504	27,275,671	5,251,071	519,327	3,276,114
1902... ...	80,232,805	17,346,149	27,283,458	4,737,029	600,497	3,485,841

Year.	Australia.	Switzerland.	Italy.	Total.	Average.
1893... ...	890,637	227,141	1,631,908	58,343,976	
1894... ...	1,098,066	703,021	2,900,390	77,222,724	
1895... ...	1,281,104	467,718	3,550,736	94,676,111	74,809,414
1896... ...	1,458,253	617,707	2,669,106	68,994,843	
1897... ...	1,875,170	897,047	2,991,889	97,256,310	
1898... ...	1,995,680	236,686	2,485,362	85,244,959	
1899... ...	2,169,921	111,578	3,581,709	116,787,526	
1900... ...	2,530,525	117,877	7,109,311	99,560,316	117,572,263
1991... ...	2,533,357	150,284	12,569,485	135,367,172	
1902... ...	3,172,092	755,916	13,287,556	150,901,343	

Note :—In this table the returns of only those countries which bear close commercial relation with Japan are given, and those with Holland, Austria-Hungary, Spain, Norway-Sweden, Turkey, Portugal, Denmark, Hawaii, etc. are omitted.

British India having been converted into a gold country in 1899 it is also omitted.

This remark also applies to the table relating to imports given next.

IMPORTS FROM GOLD-STANDARD COUNTRIES.

(unit of *yen*).

Year.	United States of America.	Great Britain.	France.	Germany.	Belgium.	British America
1893... ...	6,090,408	27,929,628	3,305,277	7,318,134	935,001	16,629
1894... ...	10,982,558	42,189,874	4,348,048	7,909,542	1,201,121	45,395
1895... ...	9,276,360	45,172,111	5,180,135	12,233,159	2,066,245	13,718
1896... ...	16,373,420	59,251,780	7,682,347	17,183,953	3,106,094	51,525
1897... ...	27,030,538	65,406,266	5,147,592	18,143,280	3,173,218	129,129
1898... ...	40,001,098	62,707,572	6,579,893	25,610,962	4,316,703	156,986
1899... ...	3,845,894	44,836,994	5,768,180	17,613,191	5,415,815	183,018
1900... ...	62,761,198	71,638,220	8,095,820	29,199,696	7,949,253	316,669
1991... ...	42,769,430	50,575,789	3,752,828	28,320,102	5,810,897	181,785
1902... ...	48,652,825	50,364,029	4,745,776	25,812,921	6,977,656	517,274

Year.	Australia.	Switzerland.	Italy.	Total.	Average.
1893...	319,034	669,301	86,578	46,669,990	
1894...	534,763	629,208	170,340	68,010,849	
1895...	1,031,725	1,040,212	148,465	76,162,120	74,511,069
1896...	835,046	2,534,217	182,924	107,201,306	
1897...	897,050	2,555,905	213,267	122,696,245	
1898...	1,403,436	3,498,310	385,819	44,660,869	
1899...	1,708,670	1,676,669	236,988	115,654,414	
1900...	2,455,940	3,012,505	450,107	85,879,048	144,525,327
1901...	1,777,599	2,208,574	154,382	135,551,386	
1902...	1,672,218	1,951,047	186,813	140,880,559	

EXPORTS TO SILVER-STANDARD COUNTRIES.

(unit of *yen*).

Year.	China.	Hongkong.	Korea.	French India.
1893	7,714,420	15,688,875	1,301,243	—
1894	8,813,987	16,199,481	2,365,112	24,523
1895	9,135,109	18,362,803	3,831,477	17,555
1896	13,823,844	19,965,900	3,367,693	30,461
1897	21,325,065	25,390,294	5,196,573	35,514
1898	29,193,175	31,473,896	5,844,332	111,421
1899	40,257,034	34,291,308	6,995,931	161,048
1900	31,871,590	39,177,455	9,953,272	114,407
1901	42,925,579	41,786,647	11,372,551	148,470
1902	46,838,545	25,876,059	10,554,183	158,411

Year.	Philippine Islands.	Siam.	Total.	Average.
1893	120,417	6,403	24,831,358	
1894	220,587	2,953	27,626,743	
1895	194,832	7,930	31,549,706	30,348,321
1896	187,786	9,892	37,385,576	
1897	186,383	22,466	52,156,295	
1898	115,433	41,720	66,779,977	
1899	286,772	26,614	82,018,707	
1900	1,257,126	35,621	82,409,471	83,054,674
1901	2,580,682	32,002	98,849,930	
1902	1,731,739	56,347	85,215	

Note:—In this table the returns of only those countries bearing close commercial relation with Japan are given, and the returns of Peru, Mexico, etc. are therefore omitted.

As Russia was changed to a gold country in 1898 its returns are also omitted.

This remark also applies to the next table.

IMPORTS FROM SILVER-STANDARD COUNTRIES.

(unit of *yen*).

Year.	China.	Hongkong.	Korea.	French India.
1893	17,095,675	8,268,071	1,999,439	—
1894	17,511,507	8,999,718	2,183,313	6,087,615
1895	22,985,144	8,078,190	2,925,400	3,382,674
1896	21,344,521	9,133,778	5,118,925	1,673,388
1897	29,265,849	12,027,197	8,864,360	9,525,552
1898	30,523,862	15,604,467	4,796,032	26,668,444
1899	28,687,731	7,338,455	4,976,167	4,489,326
1900	29,960,740	10,659,855	8,805,618	3,632,642
1901	27,256,986	11,141,788	10,052,438	4,082,897
1902	40,590,858	2,454,881	7,957,946	5,649,946

Year.	Philippine Islands.	Siam.	Total.	Average.
1893	567,133	54,391	27,984,709	
1894	1,698,819	618,859	37,099,831	
1895	1,220,745	143,095	38,735,248	35,774,647
1896	1,804,914	203,275	39,278,801	
1897	2,675,300	1,190,669	63,549,223	
1898	3,294,183	4,175,610	85,362,598	
1899	2,383,874	757,030	48,632,583	
1900	2,284,294	585,480	55,928,630	61,295,461
1901	2,981,031	1,195,082	56,710,221	
1902	1,493,865	1,695,779	59,843,275	

CHAPTER IV—The Condition of the Money Market.

Introductory—History and Existing Condition—Prices of Commodities—Wages—Quotation of Stocks and Shares.

I. INTRODUCTORY.

General Remarks.—In reviewing the actual condition of the money market in the early part of the era, we find that there existed practically no regular organs of the money market. To make matters worse, the defective communications and obstacles standing in the way of intercrourse between one place and other, always impeded the circulation of money while causing the supply of funds far from sufficient. The result was manifested in the high rate of interest and of the difficulties that lay in the way of anybody obtaining monetary accommodation.

Nor was this state of affairs improved in any striking way on the advent of the new Government. In the first place it had to issue paper money to meet the requirements of the State, and this issue of inconvertible notes was especially marked from 1873 to 1878. The amount issued on the occasion of the South-Western Civil War alone was as much as 27,000,000 *yen*. The evil due to the presence of this disturbing element in the money market was made still worse by the presence of bank notes which were issued by the national banks the number of which had been very much increased in consequence of the amendment of the National Bank Regulations in 1876. In 1880 the amount of bank notes issued reached over 34,400,000 *yen*, and the volume of Government and bank notes totalled at that time no less than 159,300,000 *yen*. The banks by advancing

Issue of Paper Money.

Evils of Inconvertible Paper Money.

loans to a considerable extent tried to foster trade and manufactures, but this policy merely served to impart an artificial stimulus to them. Paper money continued to fall below par, and in 1881 it stood at the rate of 1.79 *yen* to 1 *yen* of silver. The market price of commodities and the rate of interest began to advance more and more, the imports to exceed the exports, specie to flow out of the country, and the price of stocks and shares to decline. Under the circumstances, *bona fid* trade and industry began to flag and decline and only speculative enterprises flourished. In short, finance and economics were placed in an extremely perilous situation. Various suggestions were advanced in some quarters to remedy this state of affairs. Some suggested that a foreign loan of 50,000,000 *yen* should be raised and the paper money should be redeemed, while others were of opinion that 50,000,000 *yen* premium loan bonds should be issued both at home and abroad, and that the proceeds thus procured should be applied towards redeeming the paper money. These schemes, however, ended in smoke. The Financial authorities decided to accomplish the work of redemption by resorting to ordinary measures, in other words by means of revenue surplus and by setting apart every year a certain amount of reserves for this purpose. The work of redemption carried out in pursuance of that praiseworthy resolution was began by the Government from 1881. At the same time the Government established a central bank, with the object of facilitating the smooth circulation of money. All these judicious measures adopted by the Government soon made themselves felt on the market. The condition of economic affairs underwent a marked change for the better, and paper money gradually rose again to par. The restoration of the relative value of paper money naturally caused a reaction. Market prices began to fall, business to droop, and the money market to slacken. Complaints about business depression were heard throughout the country. However this reaction was a temporary phenomenon and soon passed away.

Remedy.

From 1886 in which year the successful adjustment of paper currency was accomplished, to the outbreak of the war with China in 1894, there took place a quiet and orderly progress in the condition of monetary circulation of the country.

In 1890, there was indeed a short period of stringency as the

result of an excess of the imports over the exports by about 25,000,000 *yen*, and in consequence of the poor crops of rice in the previous year, so that in February of that year the average rate of discount in the money market of Tokyo stood upon daily balance at 3.1 *sen* per 100 *yen*. Yet after this the rate of interest became reduced gradually, until in June, 1893, the average discount rate stood upon daily balance at 1.7 *sen* per 100 *yen*,—the market price of the Govenment Consolidated Loan Bonds ranging between 108 *yen* and 110 *yen*. All this while, the foreign trade of the country was always in our favor, and new industrial enterprises began to appear, as an effect of the rise of prices caused by the fall in the price of silver. In the latter half of 1893, however, the rate of interest commenced to rise, from the increasing demand for capital caused by new industrial undertakings. But the rise in the rate of interest was especially marked in the early part of 1894 when grave disturbance arose in Korea, and on the breaking out of the war with China, in August of the same year, the average rate of discount upon daily balance rose to 20 *sen* or more per 100 *yen*, During the war, all new industrial undertakings were naturally suspended, but fortunately for only a few months, and the signing of the Treaty of Shimonoseki, and the tightness of the money market during the war, caused by the issuing of the war-loan, &c., began to slacken,—the average rate of discount falling, in October, 1895, to below 2.5 *sen* per 100 *yen* upon daily balance. At the same time, the prices kept on rising, being caused by the depreciation of silver which kept on increasing since 1893; so that apparently a bright prospect was presented for new industrial enterprises. Added to this, the expectation that the Chinese indemnity of 230,000,000 taels would be soon transported home, thus supplying plentiful capital to our money market, brought about reaction, from the state of temporary cession of all undertakings during the war to that of great industrial expansion immediately succeeding it. The prices of shares and stocks rose remarkably, new companies began to be created in large numbers, while old companies hastened to increase their capitals. The excited state of the money market at this time may be judged from the

Effect of the Japan-China War.

fact that the rights for stocks, for which but a few *yen* as earnest money had been paid in, usually commanded high prices. The state of things being such, the total amount of capital subscribed for new companies or for the expansion of old undertakings during 1894 aggregated some 339,840,000 *yen*. When to this was added the amount which had been already invested in industrial enterprises, the total capital was calculated at that time to come up to the immense sum of about 939,540,000 *yen*. It was apparent, however, that it was beyond the economic resources of the nation to meet such an immense and sudden demand for capital. Besides, owing to the decrease in our export trade with the United States of America, on account of the prevailing economical distress in that country, and to the increased purchasing power of the lower classes at home, a result of the war time disbursements by the Government, as well as to the increased demand for machineries and raw materials used in manufacture, a necessary accompaniment of the sudden industrial expansion,—owing to these causes, in 1895 imports exceeded over exports by about 53,830,000 *yen*; while in the following year there was even a larger excess of about 56,150,000 *yen*, owing to a remarkably increased importation of rice on account of the poor crops of rice in the preceding year and the increased importation of machineries and raw materials.

Such being the economic condition of the country, the rate of interest kept on steadily rising since about August of 1896; in December of the same year, the average discount rate in Tokyo stood upon daily balance at 2.7 *sen* or more per 100 *yen*; in 1897 the rate kept on rising until in December it stood upon daily balance at 3 *sen* or more per 100 *yen*. The stringency of the money market began to be generally felt, so that in that year 101 cases of the bills drawn on the union banks of Tokyo were dishonored, though these amounted in money altogether to only about 62,500 *yen*. Unfortunately the rice crops of 1897 were even poorer than in the previous year and there took place also increased imports to take advantage of the old tariff rates in view of the coming into operation of the new tariff regulations. These things combined to bring up the excess of imports over exports to about 111,740,000 *yen*. The tightness of the money market grew greater

and the rate of interest became higher, so that between April and May, 1898, the average discount rate in Tokyo stood upon daily balance at 3.2 *sen* per 100 *yen* and the Consolidated Loan Bonds showed the signs of depreciating to below 90 *yen*. There were during the first half of the same year 60 cases of the bills drawn on the union banks of Tokyo, amounting to about 51,400 *yen*, which could not be collected.

Economic Reaction.

It is not surprising that under these circumstances there should happen a number of cases of newly established companies or old companies with expanded capital failing to secure the payment of the subscriptions. And the poor crops of rice during successive could not affect the market and to depress business. For these reasons, many industrial companies found exceedingly difficult to maintain themselves, and the spectre of a panic stared at our economic community. The Finance Minister at the time, now decided to employ the remaining portion of the Chinese indemnity for relieving the prevailing distress, and subscribed some 3,740,000 *yen* to the debentures issued by the Hypothec Bank of Japan, and instructed it to make loans to embarressed companies having promising prospects. Moreover, the Government bought up from the market the Loan Bonds to the amount in face value of about 38,700,000 *yen*. Thus was our economic community barely saved from an impending catastrophe.

Improvement.

After this, the money market became easier and the rate of interest showed a tendency to fall. In December, 1898, the average discount rate in Tokyo stood upon daily balance at about 2.8 *sen* per 100 *yen*; and in January, 1899, it stood at 2.7 *sen*, becoming still less in September, namely 2 *sen* per 100 *yen*, owing to the rich rice harvest in the preceding year, and the restoration of parity between the imports and exports in the foreign trade on account of the increased export of silk, *habutaye*, copper, etc., in 1899.

This encouraging state of affairs seemed to continue to exist in October as in September, when, owing to the Transvaal difficulties, the stringency of the money market became manifest in England, the very centre of the world's money market. The Bank of Eng-

land commenced raising its rate of interest and to absorb gold into its coffers, and India also, in view of its intended adoption of the gold standard, began to take steps to absorb gold. There commenced now in October and November, the export of gold from this country to India. These things led the Bank of Japan to raise its rate of discount on November 10th, from 1.6 *sen* per 100 *yen* upon daily balance to 1.7 *sen*, which further led the general discount rate in Tokyo to be raised in the same month on an average to 2.3 *sen* per 100 *yen*. The money market was now getting tighter, and on the 27th day of the same month, the Bank of Japan again raised its discount rate to 1.9 *sen* per 100 *yen* upon daily balance. The latter fact was, however, misunderstood by the public and the rumor spread throughout Tokyo that the Bank of Japan ceased to make loans. At this, there spread considerable alarms and, for three or four days, the prices of stocks and shares underwent a rapid depreciation and there seemed at one time that some sort of panic was impending. The real situation of monetary matters, however, soon became known and the market returned to its normal condition. Yet owing to the after-effect of these disturbances and to the fact that the end of the year was at hand, the tightness of the money market yet continued to prevail and the Bank of Japan was barely enabled to tide over this difficult season by making an excess-issue of its notes.

Market in 1900.

Coming to 1900 we find that the money market continued to tighten, and that the Bank of Japan raised the rate of discount on daily balances to 2.2 *sen* in March, then to 2.6 *sen* in April, and lately to 2.7 *sen* in July. This was the highest level ever reached in recent years. This action on the part of the central bank was reflected on the general market, for after July the rate of discount in Tokyo remained at a level of 3 *sen* or even more. The outbreak of the North China trouble in June and the despatch of a large army by Japan introduced another element of disturbance in our economic market. This effect was felt most keenly by our merchants and manufacturers engaged in the export trade to China, for the exports to North China were completely stopped. The stoppage of the export of spinning yarns involved all these concerned in serious

difficulties, and the quotation of negotiable bonds fell to an extent rarely know before.

Market in 1901.

The market did not improve at the beginning of 1901, for though the general state of things somewhat changed for the better the business classes, warned by their bitter previous experiences, were vigilantly on their guard, and refrained from undertaking any new projects. The demand for funds declined, and dullness prevailed over the market. At this juncture the 79th Bank and the Naniwa Bank of Osaka which had been struggling against the increasing difficulties collapsed, and with their collapse two or three others were either declared bankrupt or stopped payment. The result was that something like a panic overtook the market of Osaka.

Coming to the second half of the same year we find that the market somewhat recoverd its normal aspect, and what with the activity of the export trade and the satisfactory prospects of the rice crop, the public mind regained more or less its normal composure. Nontheless the economic circles still maintained their cautious mood; the money market continued dull and business could not yet recover its normal activity.

Market in 1902.

The market continued inactive even after it entered into 1902, so that with no fresh demands appearing for funds and with the balance of import and export of specie always in favor of the former, the supply of funds remained to be in excess over demand. Such being the state of economic market the Bank of Japan lowered on March 19th the rate of discount from 2½ *sen* to 2.2 *sen*. This lowering did not much invite applications for loans, inasmuch as the current rate in Tokyo had already stood from the beginning of the year at 2½ or 2.6 *sen*. To make the matters worse, the hope entertained that the demands for money must become active with the arrival of silk and tea seasons were falsified owing to the bad harvest of tea and barley. Naturally therefore the complaint about tradal depression was heard in a louder voice than it was before. Far more serious was the effect of frost damage of mulberry trees, so that the season when the money-market usually presents a brisk appearance passed without any perceptible change for the better. The consequence was even at

this end of the silk season the Bank of Japan had the issue margin of as much as 20 million *yen* left, and as, in the meanwhile, the import of specie had always exceeded the export, the specie reserves of the bank grew to over 76 million *yen*, with the immediate prospect of further increase. Then whatever reassuring sign the stock market indicated about this time by anticipating the further lowering of the rate of interest by the Bank of Japan, that was suddenly checked by an unexpected amendment of the Bourse Regulations on June 3rd. In view of these circumstances, the bank again lowered the official rate of interest by 0.2 *sen*. This act on the part of the central bank was at once reflected on the money market of the city, and the banks hastened to reduce all round the scale of interest, the rate for fixed deposits from 7 to 6½ per cent, that of daily current account from 1½ to 1.2 *sen*, and that of petty account from 1.8 to 1½ *sen*. This decrease of the rate of interest was of no avail, owing to untoward circumstances, i.e., the prevalence of unseasonable weather during the summer months with the gloomy prospect, in consequence, of the crop of rice in the fall. Further, the continued excess of exports over imports in the second-half of the year, and the steady inflow of specie pushed the amount of specie reserves of the Bank of Japan above the level of 80 million *yen*. Again the bank lowered the rate of daily balance by 2 *sen* on October 3rd, and two days after the metropolitan banks lowered the daily rate for loan to 1.8 *sen* or 2 *sen*. About this time the Government caused the Industrial Bank of Japan to sell abroad the loan bonds to the extent of 50 million *yen*. At the same time the export of silk, *habutaye* and other important export items became active and these causes naturally led to the arrival of specie in a larger sum. The result was the specie reserves of the bank almost reached the level of 100 million *yen* in the early part of December. Under such circumstances, and also owing to the continued slump in business, the demands for money could not but be inactive, and early in December the bank's record left the issue-margin of as much as 20 million *yen*, an unusual phenomenon for the end of the year. The bank therefore lowered the rate of interest by 0.1 *sen* on December 9th, and even then the loans made by the bank to general public did not exceed 36 million at

the end of the middle of the month. This state of affairs underwent a sudden change coming to the last decade, when demands for money suddenly began to become active, the market was all at once tightened, and in a few days the central bank had to advance loans amounting to 19,280,000 *yen*. At the end of the year the loan account to general public stood at 55 million *yen*, this being about 2 million more compared with the corresponding figures in the preceding year. It goes without saying that the current rate of interest was somewhat raised by the city bankers, i.e., by 0.2 to 0.3 *sen* in daily balance. However, all things considered, the market passed 1902 in a very quiet state.

STATISTICS :—Below are appended tables giving the fluctuations of the rate of interest, the market prices of commodities and the quotations of negotiable bonds in recent years.

TABLE I.—RATES OF INTEREST.

RATES OF INTEREST THROUGHOUT THE COUNTRY.

Year.	On Loan		On Discount of Bills Payable at the Same Place.		On Current Deposits.		On Fixed Deposits.	
	Maxi'm.	Mini'm.	Maxi'm.	Mini'm.	Maxi'm	Mini'm.	Maxi'm	Mini'm.
	%	%	*sen.*	*sen.*	*sen.*	*sen.*	*sen.*	*sen.*
1887	—	—	—	—	—	—	—	—
1888	—	—	—	—	—	—	—	—
1889	15.00	8.48	4.25	2.63	—	—	5.68	2.90
1890	15.12	9.42	4.42	2.95	—	—	5.88	3.12
1891	14.89	8,94	4.12	2.78	—	—	5.78	3.12
1892	14.08	8.43	3.95	2.62	—	—	5.59	3.04
1893	13.12	7.60	3.66	2.33	—	—	5.35	2.76
1894	13.81	8.83	3.97	2.69	—	—	5.54	3.38
1895	13.95	9.21	4.02	2.83	—	—	5.81	3.88
1896	13.92	8.95	3.93	2.76	—	—	6.14	4.05
1897	13.86	9.68	4.05	2.83	—	—	6.47	4.20
1898	14.50	10.46	5.20	3.20	—	—	7.50	4.95
1899	12.90	8.80	3.78	2.51	1.70	1.18	6.90	5.70
1900	14.10	9.80	4.00	2.79	1.78	1.28	7.50	6.00
1901	14.40	11.60	4.06	3.35	1.81	1.49	7.70	6.80
1902	13.90	10.00	3.93	2.78	1.73	1.22	7.60	6.30

TABLE II.—RATES OF INTEREST.

OFFICIAL RATES OF INTEREST OF THE BANK OF JAPAN.

(unit of *sen.*)

	On Loans.		On Discount of Bills Payable in Tokyo.		On Discount of Bills Payable at Other Places.	
	Maximum.	Minimum.	Maximum.	Minimum.	Maximum.	Minimum.
1887	1.61	1.37	1.60	1.50	1.80	1.65
1888	1.94	1.51	1.85	1.50	2.00	1.65
1889	1.92	1.70	1.90	1.60	2.10	1.65
1890	1.92	1.78	1.90	1.65	2.10	1.90
1891	2.10	1.75	2.00	1.70	2.20	1.85
1892	1.75	1.65	1.80	1.60	1.85	1.75
1893	1.70	1.30	1.70	1.30	1.90	1.40
1894	2.20	1.70	2.10	1.70	2.30	1.90
1895	2.20	2.00	2.10	1.90	2.30	2.20
1896	2.10	2.00	2.00	1.90	2.30	2.20
1897	2.50	2.10	2.20	2.00	2.50	2.30
1898	2.70	2.30	2.40	2.00	2.70	2.30
1899	2.30	1.80	2.00	1.60	2.30	1.90
1900	2.70	2.20	2.40	1.90	2.70	2.20
1901	2.70	2.70	2.40	2.40	2.70	2.70
1902	2.70	1.90	2.40	1.70	2.70	2.00

TABLE III.—RATES OF INTEREST.

RATES OF INTEREST OF THE TOKYO BANKERS' ASSOCIATION.

(unit of *sen.*)

Year.	On Loans.		On Discount of Bills Payable in Tokyo.		On Current Deposits.		On Fixed Deposits.		
	Maxi'm.	Mini'm.	Maxi'm.	Mini'm.	Maxi'm.	Mini'm.	One Year.	Six Months.	Three Months.
1887.....	3.01	1.95	3.48	1.72	0.95	0.94	4.71	4.68	4.79
1888.....	3.29	2.19	3.31	1.95	1.10	0.49	5.41	4.66	3.44
1889.....	3.29	2.19	3.46	2.17	1.15	0.82	5.70	4.74	3.74
1890.....	3.33	2.47	3.63	2.27	1.10	0.82	5.95	5.24	4.36
1891.....	3.04	2.21	3.50	1.70	1.29	0.55	6.00	5.08	3.94
1892.....	2.52	2.02	3.30	1.70	1.23	0.77	5.78	4.35	3.23
1893.....	2.54	1.55	2.59	1.40	1.11	0.51	4.72	4.25	3.59
1894.....	2.96	2.13	3.70	2.14	1.15	0.79	4.46	4.91	4.27
1895.....	2.93	2.32	3.23	2.32	1.23	0.92	5.93	5.37	4.77
1896.....	2.93	2.28	3.00	2.25	1.31	0.98	6.05	5.49	4.94
1897.....	3.26	2.55	3.19	2.53	1.50	0.99	6.44	5.89	5.31
1898.....	3.34	2.75	3.48	2.67	1.84	1.31	7.35	6.97	6.43
1899.....	2.93	2.00	3.10	1.89	1.79	1.20	6.62	6.26	5.93
1900.....	3.39	2.43	3.36	2.33	1.80	1.33	7.19	7.01	6.68
1901.....	3.56	3.02	4.19	2.89	1.82	1.62	7.56	7.38	7.10
1902.....	3.30	2.00	3.25	1.80	1.79	6.50	7.06	6.93	6.62

TABLE II.—PRICES OF PRINCIPAL COMMODITIES.

(unit of *yen*).

Kind of Commodities.	1887.	1888.	1889.	1890.	1891.
Rice per 1 *koku* ..	4.710	4.370	5.560	8.150	6.860
Barley „ ...	2.360	2.150	2.460	3.730	3.650
Soja-Beans „ ...	4.070	3.960	4.920	5.450	5.120
Table-Salt „ ...	1.190	1.060	1.480	2.060	1.550
Soy „ ...	8.290	8.310	8.950	9.370	9.110
Sake „ ...	13.930	12.870	13.450	14.380	14.240
Tea per 100 *kin*...	26.090	24.480	24.660	25.670	25.470
Leaf-Tobacco „ ...	8.480	8.620	8.810	9.670	9.120
Japanese White Sugar... ... „ ...	8.770	8.610	9.540	9.890	8.620
Foreign White Sugar „ ...	7.750	7.850	9.010	8.660	7.810
Japanese Brown Sugar... ... „ ...	6.180	5.950	6.390	6.780	6.020
Foreign White Sugar „ ...	5.020	5.170	5.580	5.490	5.360
Japanese Ginned Cotton ... „ ...	18.520	19.230	21.650	20.190	18.720
Foreign Brown Sugar „ ...	16.640	18.870	19.310	17.870	17.490
Japanese Cotton Yarn... ... „ ...	31.040	32.370	31.630	28.176	26.270
Foreign White Sugar „ ...	30.830	31.520	30.540	29.610	27.480
White Cotton Cloth per 1 *tan*...	310	310	320	320	300
Foreign Grey Shirtings per 100 *kama*...	—	—	2.380	2.390	2.330
Raw Silk { Superior per *kin*...	—	—	—	—	—
Raw Silk { Medium „ ...	—	—	—	—	—
Raw Silk { Inferior „ ...	—	—	—	—	—
Kaiki (Silk Tissue) per 1 *tan*...	2.580	2.579	2.740	2.710	2.670
Hemp per 100 *kin*...	20.450	19.520	20.990	19.480	19.080
Japanese Pig Iron... ... per 1 *kwan*...	230	270	300	240	270
Foreign „	—	—	—	—	—
Petroleum... per box containing 2 cans...	2.020	2.220	2.270	1.950	1.750
Coal per ton ...	3.390	3.860	4.200	4.200	4.380
Fuel per 10 *kwan*...	110	110	130	130	120
Charcoal „ ...	290	310	350	360	350
Manure { Dried Sardine ... „ ...	1.580	1.570	1.630	1.840	1.180
Manure { Residue of Herring Oil „ ...	—	—	—	2.200	2.060
Manure { Rape-Seed Oil Cake „ ...	—	—	—	—	—

Kind of Commodities.		1892.	1893.	1894.	1895.	1896.
Rice	per 1 *koku*...	7.000	7.080	8.240	8.210	9.160
Barley	„ ...	3.310	3.350	3.750	3.800	3.570
Soja-Beans	„ ...	5.060	5.470	5.670	5.870	6.420
Table-Salt	„ ...	1.460	1.340	1.200	1.390	2.440
Soy	„ ...	9.380	8.830	9.130	9.570	10.710
Sake	„ ...	14.240	14.030	15.320	17.230	19.960
Tea	per 100 *kin*...	28.660	26.770	30.020	30.260	33.340
Leaf-Tobacco	„ ...	10.910	12.880	12.710	14.200	12.920
Japanese White Sugar... ...	„ ...	9.260	10.020	10.770	10.350	11.120
Foreign White Sugar	„ ...	8.070	8.780	9.710	9.370	9.760
Japanese Brown Sugar... ...	„ ...	6.470	6.960	7.380	7.290	7.900
Foreign White Sugar	„ ...	5.570	5.960	6.410	5.810	6.620
Japanese Ginned Cotton ...	„ ...	18.890	19.730	19.280	20.370	22.610
Foreign White Sugar	„ ...	17.750	19.560	19.410	19.680	21.470
Japanese Cotton Yarn	„ ...	26.950	28.350	29.200	31.540	31.190
Foreign Brown Sugar	„ ...	28.580	30.780	37.430	37.840	37.210
White Cotton Cloth	per 1 *tan*...	310	310	300	300	320
Foreign Grey Shirting...	per 100 *kama*...	2.480	2.630	2.920	3.140	3.080
Raw Silk — Superior	per *kin*...	—	—	—	—	—
Raw Silk — Medium	„ ...	—	—	629.000	691.000	633.000
Raw Silk — Inferior	„ ...	—	—	—	—	—
Kaiki (Silk Tissue)	per 1 *tan*...	2.800	2.980	3.050	3.670	3.940
Hemp	per 10 *kin*...	19.660	23.040	23.410	25.120	27.090
Japanese Pig Iron ...	per 1 *kwan*...	260	280	330	380	400
Foreign „		—	—	290	290	310
Petroleum ...	per box containing2 cans...	1.810	1.850	1.950	2.380	2.420
Coal	per ton ...	3.860	4.540	4.920	4.900	5.210
Fuel	per 10 *kwan*...	130	180	140	170	190
Charcoal	„ ...	380	430	450	540	630
Manure — Dried Sardine ...	„ ...	1.740	1.960	2.200	2.260	2.800
Manure — Residue of Herring Oil	„ ...	2.240	2.420	2.350	2.430	2.980
Manure — Rape-Seed Oil Cake	„ ...	—	—	1.600	1.560	1.770

Kind of Commodities.		1897.	1898.	1899.	1900.	1901.
Rice	per 1 *koku*...	11.810	13.110	9.840	11.320	11.470
Barley	„ ...	4.880	6.040	4.460	4.740	4.070
Soja-Beans	„ ...	7.920	8.780	8.410	8.160	7.430
Table-Salt	„ ...	3.170	2.890	2.410	2.410	2.010
Soy	„ ...	13.330	14.610	15.940	17.410	18.120
Sake	„ ...	24.200	28.320	27.440	30.680	31.480
Tea	per 100 *kin*...	35.520	37.310	34.950	36.360	38.560
Leaf-Tobacco	„ ...	17.880	30.550	33.120	33.310	35.080
Japanese White Sugar... ...	„ ...	12.550	12.310	12.350	12.710	12.470
Foreign White Sugar	„ ...	10.000	10.180	9.790	10.020	10.760
Japanese Brown Sugar... ...	„ ...	9.110	9.280	8.560	9.300	8.370
Foreign Brown Sugar	„ ...	6.760	7.350	7.540	7.700	8.120
Japanese Ginned Cotton ...	„ ...	23.870	22.790	24.160	25.820	27.550
Foreign White Sugar	„ ...	21.460	21.710	22.680	24.910	25.740
Japanese Cotton Yarn... ...	„ ...	31.080	31.410	28.360	30.930	37.000
Foreign White Sugar	„ ...	37.510	37.750	43.660	52.900	54.480
White Cotton Cloth	per 1 *tan*...	370	350	360	370	380
Foreign Grey Shirting...	per 100 *kama*...	3.100	3.250	3.500	3.800	4.030
Raw Silk — Superior	per *kin*...	—	—	—	—	—
Raw Silk — Medium	„ ...	682.000	705.000	950.000	837.000	706.000
Raw Silk — Inferior	„ ...	—	—	—	—	—
Kaiki (Silk Tissue)	per 1 *tan*...	4.460	4.560	5.310	5.130	4.500
Hemp	per 100 *kin*...	27.990	27.990	25.500	31.920	30.270
Japanese Pig Iron ...	per 1 *kwan*...	420	420	410	490	500
Foreign „		330	350	390	400	320
Petroleum ...	per box containing 2 cans...	2.310	2.290	2.970	2.140	2.860
Coal	per ton ...	6.910	7.030	5.800	5.350	6.810
Fuel	per 10 *kwan*...	240	260	240	250	250
Charcoal	„ ...	730	720	750	880	840
Manure — Dried Sardine ...	„ ...	3.080	3.640	3.710	3.630	3.260
Manure — Residue of Herring Oil	„ ...	3.220	3.550	3.550	3.820	3.550
Manure — Rape-Seed Oil Cake	„ ...	1.850	2.000	2.600	2.210	1.820

TABLE III.—AVERAGE DAILY WAGES OF WORKMEN THROUGHOUT THE COUNTRY.

(unit of *rin*).

Kind of Profession.	1887.	1892.	1894.	1895.	1896.
Carpenter	224	267	300	312	380
Plasterer	225	268	306	313	379
Stone-Mason	250	303	346	359	410
Sawyer	250	257	296	307	361
Shingle Roof Thatcher	250	249	285	293	354
Tile Roof Thatcher	243	279	328	325	402
Brick-Maker	—	—	363	380	394
Mat-Maker	218	252	276	297	333
Maker of Doors, Screens, &c.	211	253	281	304	348
Paper-Hanger	215	260	283	283	331
Joiner	209	249	287	296	332
Wooden Clog Maker	—	—	252	235	278
Shoe-Maker	—	—	306	315	330
Carriage-Builder	—	—	264	279	306
Tailor (Japanese Clothes)	189	220	247	252	296
„ (Foreign Clothes)	399	359	383	384	438
Dyer	173	203	225	237	257
Blacksmith	217	251	289	280	334
Lacquerer	205	236	278	278	305
Tobacco-Cutter	171	211	231	249	284
Compositor	223	220	222	239	262
Gardener	—	—	287	291	329
Male Weaver	127	122	170	182	194
Female Weaver	74	83	112	115	132
Day Laborer	160	183	204	223	262
Wage per Month. Male Servant	1.290	1.590	1.660	1.710	2.000
Wage per Month. Maid Servant	670	850	940	930	1.120
Wage per Year. Agricultural Laborer (Male)	—	—	19.320	21.930	25.850
Wage per Year. „ (Female)	—	—	10.030	12.180	13.150

Kind of Profession.	1897.	1898.	1899.	1900.	1901.
Carpenter	434	470	506	535	593
Plasterer	436	461	495	540	590
Stone-Mason	474	509	573	605	670
Sawyer	430	464	489	533	580
Shingle Roof Thatcher	420	448	476	505	540
Tile Roof Thatcher	469	480	543	585	640
Brick-Maker	483	480	446	448	440
Mat-Maker	387	410	421	465	513
Maker of Doors, Screens, &c.	396	444	464	505	568
Paper-Hanger	380	425	460	495	535
Joiner	388	427	469	500	553
Wooden Clog Maker	318	351	381	400	420
Shoe-Maker	384	424	454	473	505
Carriage-Builder	352	410	430	465	498
Tailor (Japanese Clothes)	305	339	373	390	453
„ (Foreign Clothes)	461	494	533	558	620
Dyer	287	308	294	293	305
Blacksmith	394	413	453	475	488
Lacquerer	362	388	432	465	503
Tobacco-Cutter	353	367	390	430	473
Compositor	287	311	348	353	395
Gardener	404	446	488	513	568
Male Weaver	225	304	314	325	293
Female Weaver	150	187	186	195	193
Day Laborer	290	327	344	365	390
Wage per Month. Male Servant	2.240	2.380	2.590	2.700	2.720
Wage per Month. Maid Servant	1.240	1.360	1.770	1.560	1.670
Wage per Year. Agricultural Laborer (Male)	28.920	32.170	31.090	32.120	31.820
Wage per Year. „ (Female)	15.620	17.240	17.000	17.060	17.000

TABLE IV.—QUOTATIONS OF PRINCIPAL STOCKS AND SHARES.

(unit of *yen*).

Year.	Consolidated Public Loan Bonds (5%).			War Loan Bonds (5%).		
	Face Value.	Highest.	Lowest.	Face Value.	Highest.	Lowest.
1890	100.00	102.05	98.20	—	—	—
1891	100.00	102.80	98.63	—	—	—
1892	100.00	103.80	100.50	—	—	—
1893	100.00	110.70	101.50	—	—	—
1894	100.00	111.45	96.90	—	—	—
1895	100.00	104.00	95.90	—	—	—
1896	100.00	102.35	97.80	100.00	102.35	97.80
1897	100.00	101.65	91.90	100.00	101.65	92.20
1898	100.00	96.00	88.20	100.00	96.02	88.40
1899	100.00	100.46	93.12	100.00	100.46	93.18
1900	100.00	95.32	90.00	100.00	95.32	90.00
1901	100.00	90.70	86.20	100.00	90.70	86.20
1902	100.00	92.50	86.75	100.00	92.50	86.75

Year.	Tokyo City Bonds (6%).			Bank of Japan Shares.		
	Face Value.	Highest.	Lowest.	Paid up.	Highest.	Lowest.
1890	—	—	—	100.00	270.00	241.50
1891	—	—	—	100.00	265.00	239.00
1892	100.00	106.20	101.70	100.00	279.50	273.57
1893	100.00	118.00	105.00	100.00	366.00	278.50
1894	100.00	114.20	103.00	100.00	328.00	265.00
1895	100.00	109.00	103.00	150.00	403.00	362.00
1896	100.00	107.00	101.70	150.00	490.00	366.00
1897	100.00	102.80	95.50	150.00	400.00	358.00
1898	100.00	96.88	92.50	150.00	410.00	343.00
1899	100.00	100.94	95.90	200.00	442.00	343.80
1900	100.00	99.48	93.20	200.00	442.50	391.00
1901	100.00	94.20	87.30	200.00	430.00	373.50
1902	100.00	98.10	89.30	200.00	404.00	385.00

Year.	Yokohama Specie Bank Shares.			Hypothec Bank Shares.		
	Paid up.	Highest.	Lowest.	Paid up.	Highest.	Lowest.
1890	100.00	245.00	190 00	—	—	—
1891	100.00	200.00	170.00	—	—	—
1892	100.00	210.92	204.28	—	—	—
1893	100.00	265.00	226.50	—	—	—
1894	100.00	243.50	200.00	—	—	—
1895	100.00	298.00	215.00	—	—	—
1896	100.00	338.00	210.00	—	—	—
1897	100.00	230.00	173.00	—	—	—
1898	100.00	195.00	163.50	—	—	—
1899	100.00	293.90	187.35	50.00	68.50	46.50
1900	100.00	275.40	159.40	50.00	69 00	61.30
1901	100.00	173.80	150.00	50.00	66.50	60.00
1902	100.00	194.00	164.00	65.00	101.30	63.00

Year.	Japan Railroad Company Shares.			Sanyō Railroad Company Shares.		
	Paid up.	Highest.	Lowest.	Paid up.	Highest.	Lowest.
1890	50.00	97.30	85.30	20.00	20.50	13.70
1891	50.00	86 60	70.50	27.00	22.00	20.20
1892	50.00	83.83	81.79	27.00	23.35	22.53
1893	50.00	146.00	91.60	27.00	37.50	24.80
1894	50.00	104.00	96.00	27.00	34.30	21.70
1895	50.00	117.00	89.00	30.00	63.30	31.80
1896	50.00	121.00	98.50	30.00	63.50	41.00
1897	50 00	101.50	75.80	37.00	52.80	44.00
1898	50.00	77.50	59.00	40.00	54.28	40.00
1899	50.00	81 94	68.74	47.00	61.74	54.40
1900	50.00	76.56	66.63	50.00	56.40	48.00
1901	50.00	71.10	66.30	50.00	55.10	49.70
1902	50.00	78.60	70.20	50.00	60.30	52.70

Year.	Kyūshu Railroad Company Shares.			Kansai Railroad Company Shares.		
	Paid up.	Highest.	Lowest.	Paid up.	Highest.	Lowest.
1890	38.00	25.40	17.40	45.00	31.00	20.20
1891	37.00	35.00	30.50	47.00	38.80	31.20
1892	38.00	34.23	33.22	47.00	38.11	36 31
1893	38.00	48.00	34.80	47.00	68.50	43.30
1894	38.00	42.80	31.70	47.00	66.00	42.00
1895	41.00	80.00	44.50	47.00	80.00	46.00
1896	41·00	69.00	54.50	50.00	79.50	57.50
1897	41.00	69.30	49.10	50.00	71.50	50.90
1898	41.00	69.18	51.50	50.00	54.70	40.70
1899	50.00	71.16	57.00	50.00	56.90	44.10
1900	50.00	63.00	48.00	50.00	48.84	35.00
1901	50.00	54.00	47.00	50.00	39.90	33.80
1902	50.00	61.00	52.80	50.00	47.00	38.50

Year.	Hokkaidō Coal and Railroad Company Shares.			Tokyo Tramway Company Shares		
	Paid up.	Highest.	Lowest.	Paid up.	Highest.	Lowest.
1890	25.00	30.70	6.90	50.00	100.00	70.00
1891	39.00	48.00	38.00	50.00	73.50	43.50
1892	50.00	52.18	48.64	50.00	69.24	65.03
1893	50.00	103.00	58.00	50.00	129.00	78.00
1894	50.00	85.50	60.80	50.00	144.00	90.00
1895	50.00	103.30	77.50	50.00	405.00	123.50
1896	50.00	112.70	79.60	50.00	403.00	240.00
1897	50.00	99.20	82.00	50.00	265.00	190.00
1898	50.00	116.50	77.00	50.00	200.00	110.00
1899	50.00	108.80	85.00	50.00	256.00	190.00
1900	50.00	99.60	74.90	50.00	237.00	150.00
1901	50.00	80.70	67.00	50.00	165.00	100.00
1902	50.00	83.50	72.40	50.00	129.00	106.00

Year.	Nippon Yūsen Kaisha Shares.			Ōsaka Shōsen Kaisha Shares.		
	Paid up.	Highest.	Lowest.	Paid up.	Highest.	Lowest.
1890	50.00	79.00	65.80	—	—	—
1891	50.00	67.00	57.00	—	—	—
1892	50.00	61.66	59.90	—	—	—
1893	50.00	79.50	62.10	25.00	56.50	25.00
1894	50.00	78.50	56.50	25.00	31.60	22.00
1895	50.00	111.00	72.50	25.00	69.80	29.00
1896	50.00	120.00	69.50	25.00	64.00	32.50
1897	50.00	80.30	50.00	25.00	35.80	21.00
1898	50.00	56.90	44.00	25.00	21.20	14.30
1899	50.00	75.30	55.50	25.00	28.20	16.15
1900	50.00	69.00	55.08	25.00	26.80	21.00
1901	50.00	76.80	62.00	25.00	24.80	20.60
1902	50.00	83.00	73.40	25.00	28.70	22.40

CHAPTER V—Banks.

History – Banks.

I. HISTORY.

Before the Restoration.—Prior to the Restoration the people were not in the habit of uniting efforts or capital for the common interest of their business. The only organization that existed at that time in this direction was in the shape of guilds or unions. They were generally organizations by a body of different interests, aimed at holding a general meeting once a year or month, so that all the people engaged in the same line of business might be brought together, know one another, become friends, and consult their common interests. These organizations were, however, far from flourishing and the scope of their interest was exceedingly limited. The banking organization could not of course make any development worthy of notice. However it was not unfit for fulfilling the requirements of the times. The exchange business system, was, for instance, comparatively well developed. There existed two kinds of exchange merchants, one class called as "Hon-ryogaê" and the other known by the name of "Zêni-riyogaê." The former, also called "Goyō-ryogaê," were a sort of bankers who managed official funds. They kept in custody the taxes, in kind or cash, and settled their accounts for their patrons with bills of exchange. The Mitsui-Gumi (the predecessor of the present Mitui Firm) and the "Ten People Guild" were the most important establishments of this kind. There was also another set of exchange business for the feudal princes. All these may be regarded as the bankers of those days.

"Exchange Merchants."

After the Restoration.—Even after the Restoration, the bankers who were entrusted with the task of managing official funds

were called "exchange merchants for the Treasury," and this fact serves to show how even in former days a certain fixed usage existed in connection with the banking business.

As soon as the Restoration had been consummated, the new Government lost no time in adjusting financial matters and in devising measures calculated for the promotion of foreign trade. The first office created to take this business in charge was the Commercial Office, soon after superseded by the Foreign Trade Office which was subjoined to the Financial Office. The Foreign Trade Office approached the leading merchants in the three cities of Tokyo, Osako, and Kyoto and in the five open ports of Yokohama, Kobe, Nagasaki, Niigata, and Hakodate and persuaded them to issue paper notes convertible into gold. Owing, however, to the absence of a regular system of protection and supervision, the project ended in a failure. In December of 1871 the Tokyo Chamber applied for permission to establish a bank to be called the Tokyo Bank with a capital of 7,000,000 *yen*, and invested with the privilege of issuing paper money. The application was not entertained owing to the fact that the scheme was based on the idea of getting the capital both from the Government and people. Though the matter was therefore dropped, it deserves mention as the first attempt towards establishing a bank modelled on the Western system.

Pioneer Banks.—Meanwhile the Vice-Minister Hirobumi Ito of Finance, now Marquis Ito, who was dispatched to America in 1870 had sent home a report on the result of his inquiries into the banking system of that country. Based on that report the Government issued in November of 1872 the National Bank Regulations, the first legislative measure enacted by the Meiji Government. Four national banks were established under the regulations, which provided, among other things, for the convertibility of the bank notes into gold specie. It soon transpired that the notes into gold could not maintain the convertible system, as the excess issue had caused their depression. The banks therefore were threatened with ruin. It happened that the Government conceived at that time the idea of adjusting the hereditary pension system, and to issue for that purpose the Hereditary Pension Bonds to the extent of over 170 million *yen*. Taking opportunity of this financial measure the

Bank Regulations were amended in August, 1876, the new regulations allowing the banks to use the public bonds as security against their notes and to redeem them with Government notes. This amendment gave a powerful impulse to the creation of banks, so that within a few years they numbered as many as 153. But as the bank notes were convertible with the Government notes, they were really inconvertible notes.

Discontinuation of the National Bank System.—Under the circumstance, the Government decided to devise measures for adjusting the monetary system, aiming at the inauguration of the convertible notes institution. The first important step taken for accomplishing that great end was another amendment of the National Bank Regulations, and the elaboration of the programme of bank notes redemption to be effected by 1897.

While the part which the national banks played in the economic development of the country was indeed important, those establishment did not fail to profit themselves from the privilege accorded them by the Government. By this time only six out of the 150 banks that were created had been ordered to dissolve by the Government. Others that had ceased to exist did so by voluntarily wounding themselves on the expiration of their terms, or as a result of amalgamation with other banks. But by far the greater number availed themselves of the privilege accorded to them by the laws relating to the time-expired national banks and were converted into private banks. By February 1899 the last national bank system ceased to exist. However the notes that had been circulating for a long period could not be withdrawn from the market all at once, so that the Government proclaimed that it would effect their redemption by December of 1904, so that by that time this relic of the old financial system shall have disappeared entirely from the country.

Banking facilities for foreign trade.—In November of 1879, in accordance with the National Bank Regulations, a bank was established at Yokohama with a capital of 3,000,000 *yen*. This bank was intended to supply the banking facilities required by foreign trade and also to issue notes convertible into specie. This was the origin of the Yokohama Specie Bank. However

the note-issuing part of the object was not put into effect owing to the fact that it was fraught with grave difficulty in view of the great depreciation at that time of the value of paper money. Consequently the bank has principally devoted itself to supplying banking facilities to export and import merchants, and though at times it experienced some adversity, its business continued to prosper and expand. It should be noted that the Government placed it under a special legislative arrangement, for its business being distinct in nature from that of an ordinary bank it had been found to be inconvenient to subject it to the same regulations. This consideration led to the promulgation of the Yokohama Specie Bank Regulations.

First Private Banks.—Side by side with the national banks there existed no small number of private banks and also establishments which though not officially regarded as banks were engaged in a similar line of business. In 1884 these two latter kinds of banks numbered 954 with an aggregate capital of 34,252,735 *yen*. In general all matters relating to these establishments were left to the discretion of the parties concerned, and the local Governors were only allowed to interfere when public order and peace or the legitimate development of business were threatened. However, in view of a greater increase of the number of such establishments, it was decided to devise some method of controlling and protecting them. It was in pursuance of that end that in August of 1889 the Bank Regulations and the Saving Banks Regulations were drawn up and promulgated, to come into operation from January of 1891. With the postponment of the period of putting the Commercial Code into operation, the regulations in question were also postponed, and in the same way when part of the Code was put into operation in July of 1893 the two laws were also enforced in July, next year. In consequence of the enforcement of the regulations the private banks thus began to become regular banking establishments.

Provisions for amalgamation.—The legislative measues for regulating the banking business having been gradually completed, the banks of all descriptions were able to carry on their business with increasing activity. In this connection the want of suitable arrangements for dealing with cases of amalgamation was regarded as inconvenient,

and it was thought that some means for effecting such amalgamation by dispensing with preliminary formalities should be provided. In April of 1896 the Law relating to the Amalgamation of Banks was promulgated, this enabling banks to amalgamate by a very simple process with other establishments, besides conferring benefit to the general money market. Not a small number of banks have availed themselves of this provision and have been united to other concerns.

The Bank of Japan.—As already described, the amendment of the National Banks Regulations having imparted a powerful impulse to the creation of banks of this description, their number soon reached as many as 153 and the notes issued by them to a big figure of 34,426,351 *yen*. The creation subsequently of the Yakohama Specie Bank further added to this activity of the banking business. One serious defect was the absence of a central organ and of provisions for establishing regular channels of monetary circulation throughout the country. The time of establishing a central bank the idea of which had long attracted the attention of the parties having been judged matured in 1882, on June 27th of the same year the Bank of Japan Regulations were enacted, and the bank was formally opened to business on October 10th of that year. The objects that underlay the establishment of the bank were manifold, for it was intended to act as a pivot of the national finance, to assist the banking business throughout the country, to promote the smooth operation of the money market, to regulate the rate of interest, to develop the business of discounting bills, and above all to devise measures calculated to invite the inflow of specie. At the same time the bank had to attend to the equally important business of unifying the currency system of the country by means of the issue of convertible notes and by adjusting the existing monetary system and further to place on a sound basis this vital financial institution of the country. The bank applied itself zealously to all those matters, and its credit began steadily to rise and the scope of its business expanded. The confidence which it enjoyed from the Government has led to its being entrusted, as is also to-day, with the task of administering official money, this considerably enlarging the scope of its business. In view of all these considerations the bank increased its capital in March, 1887. During the Japan-

China war, the bank fulfilled to the satisfaction of the Government and of general public the important trust it enjoyed in monetary matters of the country, and discharged its duty with efficiency and success. On the cessation of the war, the bank increased its capital; established new branches and agents at several important places in the country and in short made the arrangements required by the expansion of its business. The bank too was given the important task of managing the Indemnity when Japan received it from China, while the part it played in the adjustment of the coinage system was qually distinguished. It is hardly necessary to add that the Bank of Japan enjoys at this moment brighter prospects than ever.

As mentioned above, the bank was invested with the privilege of issuing convertible silver notes, but this issue was for a while suspended as the exercies of such a power was thought premature at the time of the establishment of the bank. In 1884 the Silver Convertible Notes Regulations were promulgated, to be amended in August of 1888. That amendment determined the amount of specie reserve and of the issue of notes. By the amendment effected in two years later the scope of the two was further expanded. When the gold standard system was adopted by the Government in October 1897 the silver convertible notes were as a matter of course altered into gold convertible notes. This was a memorable innovation in the history of the finance of the country. Another noteworthy change, though not of equal importance, was the expansion of the amount of specie reserves and of the issue of notes, for though with the development of economic affairs the scope of monetary circulation and of credit was markedly improved, the demand for currency was largely increased as compared with what it was about 1890. This economic requirement was satisfied in 1897.

The banking organs relating to trade having been created one after another, they numbered 1,500 in 1896 with the Bank of Japan at the head of the list.

Banking organs for trade and industry.—In contrast to this satisfactory provision for trade, that relating to agriculture and manufacture still remained unsatisfactory. The banks attending to the interest of those industrial pursuits must be distinct in nature from those for trade, for it is impossible to expect from agriculture

and manufacture any success in a short space of time, while at the same time the profit derived from the undertakings is incomparatively small. Hence it follows that funds to be used for agricultural or manufactural undertakings must be of long term and at a cheap rate. It was long maintained therefore by all those concerned in the matters that banking organs for promoting the interest of farmers and manufacturers should be established as quickly as possible. At last in April, 1896, the Law relating to the Hypothec Bank of Japan and the Law relating to the Local Hypothec Banks were promulgated, the former to act as the central organ and the latter as local organs, and both to attend to the business of supplying loans on long terms and at a cheap rate to farmers and manufacturers with the view of encouraging the development of industrial undertakings. The Hypothec Bank was opened to business on August 2nd of the next year with a capital of 10 million *yen*. From 1898 the banks of this particular kind began to be started in many prefectures. Only a few years having elapsed since the creation of those banks, it is not yet possible to say anything definitely as to the effect they produced on agriculture and manufactures. It may safely be stated however that they are conferring an immense benefit on the development of economic pursuits.

The central and local Hypothec Banks being banking organs for making loans principally on real estates, their establishment did not promote to any particular extent the interest of all those who wished to get loans on negotiable bonds. The same reason which demanded the establishment of special banks for farmers and manus facturers therefore demanded the creation of banks to satisfy thi-special requirement of this special class of people. Indeed the absence of banks of this particular kind was a serious defect in the banking system of Japan. In 1900, therefore, the Law relating to the Japan Industrial Bank was promulgated, and the bank was opened to business on April 11th, 1902, with the capital of 10 million *yen*.

Banking Organs for outlying districts.—Banking facilities for the outlying parts of the Empire have received the proper attention of the authorities. The creation of a special kind of bank for Formosa

was a matter of urgent importance, for everything in that island being in an initiary stage, the exploitation of its resources and the encouragement of economic undertakings demanded banking facilities adopted to the condition of the place. In March of 1897 the Law relating to the Bank of Formosa was passed, the bank to have a capital of 5 million *yen*. It need hardly be stated that the organization of this bank was distinct from that of the banks in Japan proper, and that it was adapted to the special circumstances prevailing in the island. The bank was opened to business on September 26th of 1899.

In a similar way Hokkaidō required a banking organ suited for supplying the funds needed in exploiting the land. The result was the promulgation in 1899 of the Law relating to the Hokkaidō Colonization Bank. The object of the bank does not differ much from that of the Local Hypothec Banks, only the circumstance prevailing in Hokkaidō being different from those in Japan proper, the creation of a bank of this sort was necessary for this northern island. For instance, while the local Hypothec Banks are mainly devoted to advancing long-term loans on the security of real estate, the Hokkaido Bank, besides making loans on real states, accepts agricultural produce and negotiable bonds as objects of security, and also deals with matters relating to the issue of debenture bonds, deposits, and advances on goods. The capital of the bank is 3 million *yen* and it was opened to business on April 31st of 1900.

Obligations and Privileges of Banks under official patronage.—The Bank of Japan, the Yokohama Specie Bank, the Hypothec Bank of Japan, the Local Hypothec Banks, the Hokkaidō Colonization Bank, the Bank of Formosa, and the Japan Industrial Bank have all been established under official protection of one description or another, and in consequence of that protection more or less restriction is placed on their business operations. For instance the banks must get the approval of the Government for their articles of association, and must also obtain the approval of the Minister of Finance even in carrying out business operations within their respective legitimate province. Then the authorities sometimes appoint one or two overseers for the purpose of efficiently controlling those establishments, while the Governors, Presidents or Directors

are either directly nominated by the Government or appointed by it after they have been elected by the general meeting of shareholders of the respective banks. In returns for all these inconveniences, the banks enjoy various privileges sufficient to compensate them.

II. VARIOUS BANKS.

National Banks.—Established in conformity with the National Bank Regulations already mentioned, the national banks were the first banking establishments that were organized in Japan on the Western model.

The main causes that led to the creation of these financial institutions were to supply banking facilities required in trade and also to redeem Government paper money issued to an amount out of proportion to the demand of the market. These banks were organized in the main after the pattern of the American national bank system, and were allowed to issue bank notes convertible in specie. According to the National Bank Regulations the "Kinsatsu" Exchange Bonds which were newly issued for the redemption of the Government paper money in circulation, were to be deposited by national banks as security for the same amount of bank notes issued, which, however, might not exceed 60 per cent. of their capital. Besides, they were obliged to keep specie reserve for the redemption of the notes and equal in value to 40 per cent. of their capital, so that two thirds of the notes issued were always covered by specie reserve. But the price of specie was steadily rising at that time, producing a considerable difference between specie and paper, so that as soon as the bank notes were issued, so much demand for redemption was made on the banks, that these notes never obtained any extensive circulation in the market. The natural consequence was that only a few national banks were established and even these were soon placed in a deplorable condition, so much so that the National Bank Regulations could not be upheld in full operation, and the Government was soon induced to introduce some revisions in the Regulations. By the amendment made in 1876

the national banks were now allowed to place as security for the bank notes the new Hereditary Pension Bonds besides the "Kinsatsu" Exchange Bonds. It ought to be remembered that the Pension Bonds were issued in a large amount at that time and the general depreciation of public bonds appeared almost certain, unless some special measures were deviced to prevent it. The most important point in the amendments was that the obligation of the note-conversion in specie was abolished, and that any kind of Government paper currency might now be kept as reserve against note-redemption. At the same time the amount of reserve was reduced to 25 per cent. of the capital. These amendments gave a strong impulse to the formation of new national banks; indeed they sprang up so rapidly that the Government was now resolved to check this tendency, by putting a limit to the amounts of notes the banks might issue. Still they kept on increasing from year to year, until at last paper currency considerably fell below par and the consequent rise of price of commodities. When about 1878 the value of paper currency was further falling, with no immediate prospect of amelioration, the Government decided to make a radical reform in the banking system of the country, and after much deliberation this arduous task was commenced in 1882 by the creation of the Bank of Japan, so that the national bank system might be replaced by that of the single central bank of issue. In 1884 the Convertible Bank Notes Regulations were enacted by which the privilege of issuing notes was exclusively lodged in the hands of the Bank of Japan. Meanwhile, certain revisions and additions were introduced in 1883 in the National Bank Regulations, providing, among other things, that the national banks were, on the expiration of their term of character, to give up their privilege of issue, but allowed to continue their business as private banks; besides proper measures were introduced to effect by degrees the redemption of their notes. Two laws were enacted for facilitating the change, one (Law No. 7, 1896) to regulate the winding of national banks on the expiration of their term of charter and the other (Law No. 11, same year) being the regulations for the special winding of national banks prior to it. The latter law induced many national banks to hasten reorganising themselves into private banks; hence only seven national banks remained as such until the expiration of

the term of their charter. The last closed its business as bank in February 1901 and thus the change was completed sooner and easier than had been expected.

1. The Bank of Japan.—The Bank of Japan, the central banking organ of Japan, was founded in the form of a joint stock company in accordance with the Imperial Ordinance for the Bank of Japan issued in 1882. Its authorized capital was at first 10,000,000 *yen* but was twice increased making the present amount of 30,000,000 *yen* fully paid up.

This bank has the privilege to issue convertible bank notes on the security of gold or silver coins and bullion equal to the amount of the notes issued, and to issue further those notes on the security of Government bonds and Treasury bills, or other bonds or commercial bills of a reliable nature, within the limit of 120,000,000 *yen*. This amount was limited to 85,000,000 *yen* before 1899 and to 70 million *yen* before 1890.

The notes issued in excess of the said amount are subject to a tax of 5 per cent. or more per annum of the amount of the same.

The following lines of business are conducted by the bank:—

1. To discount or purchase Government bills, bills of exchange, commercial bills, etc.; 2. to buy or sell gold or silver bullion; 3. to make loans on the security of gold or silver coins or bullion; 4. to make collection of bills for banks, companies and merchants, who are regular customers; 5. to receive deposits in current accounts and accept the custody of object of value, such as gold, silver, other precious metals and documents; 6. to make advance in current accounts or loans for fixed periods upon the security of Government bonds, Exchecquer bills or other bonds and shares guaranteed by the Government.

In addition, the bank is entrusted with the management of the Treasury fund.

2. The Yokohama Specie Bank.—The Yokohama Specie Bank was founded in 1879 with the authorized capital of 3,000,000 *yen* for furnishing financial facilities for the foreign trade of the country. It was at first supported by the Government in various

directions. For instance, it was entrusted with the management of several million *yen* of the Treasury Reserve Fund and thus to possess an ample amount of capital for discounting foreign bills of exchange. In 1882, when the Bank of Japan was established, all those kinds of support were withdrawn, and instead of them the Bank of Japan was made to rediscount foreign bills of exchange upon the demand of the Specie Bank to an amount not exceeding 20,000,000 *yen* a year at the rate of 2 per cent. In March 1887, regulations for the Specie Bank were promulgated and at the same time the capital was raised to 6,000,000 *yen*. The consequent growth of its transactions necessitated the further increase of its capital to 12,000,000 *yen* in the same year. In 1899 the capital was again doubled, making 24,000,000 *yen* of which 18,000,000 *yen* are now paid up.

The following lines of business are transacted by the bank:—

1. Foreign exchanges; 2. inland exchanges; 3. loans; 4. deposits of money and custody of objects of value; 5. discount and collection of bills of exchange, promissory notes and other cheques: 6. exchange of coins. The bank may also buy or sell public bonds, gold or silver bullions and foreign coins, if the condition of business demands it. The bank may also be entrusted with affairs bearing on foreign loans and the management of public money for international account.

3. The Hypothec Bank of Japan.—The Hypothec Bank of Japan was founded in 1884 as a joint stock company with a capital of 10,000,000 *yen* under the special patronage and control of the Government. The object of the bank was, as is still the case, for the furnishing of long-period loan at low rate of interest for purposes of agriculture and industry. It is to serve as the central organ of credit for agricultural and industrial enterprises of larger scale throughout the whole country, as the local Hypothec Banks undertake similar business in the respective localities.

The chief lines of business transacted by the bank are as follows:—

To make on the security of immovable property, loans redeemable in annual instalments within the limit of period of not more than fifty years; to make loans on a similar security,

redeemable at a fixed term of not more than five years, provided the total amount of such loans not exceeds one-tenth of the total amount of loans redeemable in annual instalments; (The amount of loans made on the security of any immovable property may not exceed two-thirds of the value thereof, as appraised by the bank); to make loans without security to Prefectures, Districts, Cities, Towns and other public bodies organized by law; to take up the mortgage debentures of Local Hypothec Banks; to accept the custody of gold and silver bullions and negotiable instruments.

The bank is authorized, when at least one-fourth of its nominal capital is paid up, to issue mortgage debentures up to an amount not exceeding ten times its paid up capital, provided the amount of such debentures does not exceed the total amount of outstanding loans redeemable in annual instalments and the debentures of Local Hypothec Bank in hand. These debentures shall be redeemed at least twice a year by means of drawings in proportion to the total amount of redemption of loans redeemable in annual instalments in the same year and the debentures of Local Hypothec Banks in hand. Besides, for each issue of debentures premiums of various amounts varying from ten to one thousand *yen* are allotted to a certain number of the debentures determined by drawings. This is the single exception in the midst of the general prohibition of lottery or any lottery-like system, specially allowed to the Hypothec Bank, in order to attract smaller capitals to the subscription of its debentures. The Government guarantees profit for ten years from the founding of the bank, when the profit does not reach 5 per cent of the paid-up capital.

4. The Local Hypothec Banks.—The Local Hypothec Banks were established in 1896 in accordance with the Law for the Local Hypothec Banks as local organs of credit for the same object as that of the Hypothec Bank, each with a capital of two hundred thousand *yen* or upwards. As a general rule each bank has for its business district the whole part of the prefecture where it is established, each prefecture having one bank, but it is provided that if the circumstances require, a prefecture may be divided into

two or more business districts, but this provision has not as yet been made use of.

The following lines of business are transacted by these banks:—

To make, on the security of immovable property, loans redeemable in annual instalments within the limit of period of not more than thirty years; to make loans on a similar security, redeemable in a fixed term of not more than five years, provided the total amount of such loans does not exceed one-fifth of the total amount of loans redeemable in annual instalments, (loans made on the security of any immovable property may not exceed two-thirds of the value thereof, as appraised by the banks); to make loans on the same conditions without security to Cities, Towns, Villages and other public bodies organized by law; to make loans without security, redeemable in a fixed term of not more than five years to more than twenty persons combined with joint liability, who are engaged in agriculture or industry and whose reliability is recognized; to receive fixed deposits and accept the custody of gold and silver bullion and negotiable instruments. Besides, the banks may be entrusted with the receipt and disbursement of the public funds of prefectures. Each of these banks is authorized, when at least one-fourth of its capital is paid up, to issue mortage debentures, to an amount not exceeding five times its paid up capital. Such debentures may not, however, exceed the total amount of outstanding loans redeemable in annual instalments. The debentures shall be redeemed at least twice a year by means of drawings, in proportion to the amount of the redemption of the said loans. In accordance with the provisions of the Law for giving support to the Local Hypothec Banks, the Government gave over to the prefectures funds with which to subscribe to the shares of the respective Local Hypothec Banks. The amount of the said funds is limited by the law at the rate of 70 *yen* per 100 *cho* of taxable lands in each prefecture, excepting building sites, mineral spring lots and swamps, and the total amount assigned to each prefecture may, under no circumstances, be more than 300,000 *yen*, nor may it exceed one-third of the paid up capital of each bank.

5. The Hokkaido Colonization Bank.—The Hokkaidō Colonization Bank has for its object the promotion of enterprises of colonization and exploitation of Hokkaidō, as is indicated by its name. It was established by law issued in 1889 in the form of a joint stock company with a capital of 3,000,000 *yen* and is allowed to transact the following lines of business:—

> To make on the security of immovable property loans redeemable in annual instalments within the limit of period of not more than thirty years, or redeemable in a fixed term of not more than five years; to make loans against the pledge of shares and debentures issued by joint stock companies undertaking various works for exploiting the resources of the island, and to take up debentures of such companies up to an amount not exceeding one-fifth of the total sum of outstanding loans above mentioned; to make loans or issue bills of exchange on the security of agricultural products in the island; to take up deposits; to accept the custody of objects of value; to make without security loans redeemable in annual instalments or in fixed period to municipal districts, towns and villages placed under the civic corporation law of Hokkaidō and other public bodies recognized by law. This bank is authorized to issue mortage debentures to an amount not exceeding five times its paid up capital. The debentures, however, may not exceed the total amount of outstanding loans redeemable in annual instalments. The debentures shall be redeemed at least twice a year by means of drawings, in proportion to the total amount of repayment of said loans.

In order to give support to the bank, the Government subscribed 1,000,000 *yen* of its shares and for the first ten years the dividends on these shares are to be added to the reserve fund of the bank.

The Bank of Formosa.—The Bank of Formosa was created in 1897 for the purpose of promoting the economical development of the island. It is a joint stock company with a capital of five million *yen*, and is endowed with the privilege of issuing bank notes convertible in silver *yen* against the reserve of gold or silver coins or bullion and Government bonds, treasury bills, notes of the Bank of Japan, any other negotiable papers or commercial bills of reliable

nature. The amount of notes not covered by specie reserve is limited to 5,000,000 *yen* and may in no case exceed the amount of notes issued agaiast specie reserve. Notes issued beyond this limit in case of emergency are subject to a tax of five per cent. or more per annum. The Government has subscribed one million *yen* of the shares of the bank and dividends paid to these shares are added to the reserve fund of the bank for the first five years, for which period the Government is engaged not to transfer its shares. The Government has further made an advance of 2,000,000 *yen* in silver to the bank with no interest, to be added to the specie reserve for bank notes issued.

The following lines of business are transacted by this bank:—

1. To discount bills of exchange and other commercial bills; 2. exchange business; 3. to collect bills for companies or merchants who are regular customers of the bank; 4. to make loans on the security of immovable or movable property of a reliable nature; 5. to open current accounts; 6. to accept the custody of objects of value, such as gold and silver coins, precious metals and documents; 7. to buy or sell gold or silver bullion; 8. to act as agent for other banks.

6. The Industrial Bank of Japan.—Established in April, 1902, the Industrial Bank of Japan is a joint stock company with a capital of 10,000,000 *yen* of which 2,500,000 *yen* are paid up. As the Hypothec Bank and the Local Hypothec Banks are intended to furnish long and cheap loans on the security of immovable property for agricultural and industrial enterprises, especially for the former, the Industrial Bank has for its special object to handle with bonds and shares of various kinds. It may be regarded as a kind of crédit mobilier, while the former are crédits fonciers with special forms and purposes.

The business allowed to the bank by the law comprises:—

1. To make loans on the pledge of public loan bonds, local loan bonds, companies' debentures and shares; 2. to subscribe or make up public loan bonds, local loan bonds and companies' debentures; 3. to accept deposit of money and custody of valuable objects; and 4. to transact various kinds of trust business with local loan bonds, companies' debentures and shares.

Thus, loans without security or on the security of other than negotiable papers and discounts of bills are not within the scope of the bank's business. In order to enable it to obtain necessary amount of capital for carrying out its object, the bank is also endowed with the privilege of issuing debentures to an amount of five times its paid up capital, which, however, may not exceed the total amount of advances made by the bank, the local loan bonds and companies' debentures appropriated by it. Besides, for the first five years the dividend of 5 per cent. against its paid up capital is guaranteed by the Government.

7. Ordinary Banks.—At the beginning of the era, there were no regulations so far as ordinary banks were concerned, except that their establishment was subject to the approval of the authorities. Under such a system or want of system, much inconvenience was felt by the Government in the way of the administrative control of those institutions, and the issue of regulations to deal with ordinary banks was called for repeatedly, but this desire was long not fulfilled. It was in 1890 that the general regulations for trade and companies were first established by the Commercial Code, while the Laws for Ordinary Banks and for Savings Banks were issued, the three to go in force simultaneously on 1st June, 1891. However the operation of the Code was twice postponed, and that of the two laws were similarly held back. Subsequently, after introducing in 1893 certain amendments in the Commercial Code and the Law for putting it in force their operation was announced to run from 1st July of the same year, and the two laws in question also came in force from the same date. By the new laws, ordinary banks were put under the control of the Minister of Finance, the permission of the said Minister being required for the establishment of a new bank; he is also empowered to order at any time investigations into the conditions of the business and property of the bank. Besides, provisions were made about business hours and days of rest, the obligation of making report on business, and the publication of property list and balance sheet in newspapers for each half year, etc.

8. Savings Banks.—According to the exsting law for Savings Banks which came in force on 1st July, 1893, Savings Banks

must be joint stock companies with a capital of not less than 30,000 *yen*. They may take up minor deposits from the general public on a compound interest system, and in order to safeguard the interest of the depositors they have to consign to the Deposit Office of the Treasury national or local loan bonds bearing interest, corresponding in value to one-fourth of the deposits received, for which the depositors concerned have a preferencial right. In case, however, the national or local loan bonds consigned exceed in value one half of the capital of the bank consigning them, the excess may be replaced by commercial bills or other reliable shares and stocks of any company. In other respects the regulations for ordinary banks apply also to savings banks.

BANKS.

TABLE I.—NATIONAL BANKS.

DEPOSITS.

(unit of *yen*).

Year.	Number of Banks.	Authorized Capital.	Paid up Capital.	Deposits. Government Funds and Public Money. Amount Transacted.	Balance.
1873	3	3,200,000	3,200,000	—	7,080,022
1874	4	3,450,000	3,450,000	—	3,668,520
1875	4	2,450,000	2,450,000	—	1,917,433
1876	11	20,505,799	20,505,799	—	834,235
1877	37	24,528,600	24,528 600	—	1,768,631
1878	139	38,851,150	38,851,150	—	2,466,215
1879	152	42,111,100	42,111,100	92,648,182	3,508,297
1880	150	43,216,100	43,216,100	107,460,729	4,230,065
1881	148	43,996,100	43,996,100	146,174 173	4,382,322
1882	143	44,206,100	44,206,100	141,907,452	6,305,399
1883	141	44,386,100	44,386,100	166,331,765	6,594,430
1884	140	44,536,100	44,536,190	195,258,008	6,342,813
1885	139	44,456,100	44,456,100	220,809,633	10,202,949
1886	132	43,556,100	43,556,100	261,364,607	11,649,625
1887	136	45,838,851	45,838,851	218,552,635	11,879,046
1888	135	46,877,639	46,877,639	216,452,158	10,096,462
1889	134	47,681,380	47,681,380	184,705,818	10,058,015
1890	134	48,644,662	48,644,662	149,284,488	4,830 262
1891	134	48,786,100	48,701,100	73,762,195	7,541,589
1892	133	48,325,600	48,325,600	91,271,196	8,072,448
1893	133	48,416,100	48,416,100	89,692,591	8,693,729
1894	133	48,816,100	48,816,100	106,980,408	9,035,878
1895	133	49,056,100	48,951,100	113,931,217	7,542,860
1896	121	44,766 100	44,761,770	97,122,281	6,634,354
1897	58	13,630,000	13,630,000	68,668,021	2,877,680
1898	4	390,000	390,000	12,211,900	122,142

DEPOSITS.

Year.	Fixed and Current Deposits.		Savings Deposits.		Total.	
	Amount Transacted.	Balance.	Amount Transacted.	Balance.	Amount Transacted.	Balance.
1873 ...	—	2,593,128	—	—	—	10,273,240
1874 ...	—	2,298,918	—	—	—	5,967,438
1875 ...	—	2,399,801	—	—	—	4,317,234
1876 ...	—	2,397,047	—	—	—	3,231,282
1877 ...	—	4,871,890	—	1,964	—	6,642,485
1878 ...	—	8,794,852	—	4,735	—	11,265,802
1879 ...	217,305,983	11,382,587	39,445	18,504	309,993,610	14,909,388
1880 ...	252,579,031	13,197,296	193,330	134,855	360,233,090	17,562,216
1881 ...	274,713,429	13,965,315	766,991	338,023	421,654,593	18,685,660
1882 ...	281,476,169	12,951,828	1,080,037	443,832	424,463,658	19,701,059
1883 ...	238,377,726	16,978,010	1,752,636	775,750	406,462,127	24,348,290
1884 ...	229,073,791	15,713,065	2,352,379	937,692	426,684,178	22,993,570
1885 ...	311,720,307	19,631,362	2,635,865	1,081,008	435,165,805	30,915,319
1886 ...	257,023,615	23,273,820	3,584,293	1,542,563	521,872,515	36 466 008
1887 ...	313,730,621	25,081,168	4,294,557	1,727,908	536,577,813	38,688,122
1888 ...	341,554,692	26,594,806	4,999,390	2,062,600	563 006,240	38,753,868
1889 ...	406,092,662	27,990,393	6,617,851	2,546,837	597,416,331	40,595,245
1890 ..	416,877,760	27,478,390	7,542,891	1,289 514	573,705,139	33,598,156
1891 ...	432,067,983	31,223,985	3,730 010	1,448,820	505,569,188	40,214,394
1892 ...	545,848,096	40,173,664	4,155,666	1,730,853	641,274,958	49,976,965
1893 ...	693,866,385	51,139,881	1 730,853	53,521	785,289,829	59,887,131
1894 ...	807,346,127	57,941,263	—	—	914,326,535	66,977,141
1895 ...	986,032,332	67,456,530	—	—	1,299,963,549	74,999,390
1896 ...	911,968,640	55,191,265	—	—	1,009,090,921	61,825,619
1897 ...	562,938,651	24,888,519	—	—	631,606,672	27,766,196
1898	147,066,080	745,077	—	—	159,277,980	867,219

TABLE II.—NATIONAL BANKS.

LOANS.

(unit of *yen*).

ADVANCES.

Year.	Loan to the Government.		Other Advances.	
	Amount Transacted.	Balance.	Amount Transacted.	Balance.
1873	—	—	—	2,892,929
1874	—	—	—	2,393,932
1875	—	19	—	2,460,179
1876	—	6,210,181	—	3,899,493
1877	—	12,076,207	—	6,360 048
1878	—	15,436,967	—	16,393,097
1879	—	15,455,337	131,121,044	24,826,439
1880	15,621,163	15,378,751	162,138,466	28,131,990
1881	16,720,748	15,421,098	197,595,636	30,330,274
1882	15,695,303	15,373,134	189,575,983	32,161,869
1883	15,495,865	10,366,299	160,868,799	32,346,236
1884	10,650,254	10,394,282	156,405,021	35,615,271
1885	10,899,395	10,509,277	137,233,879	32,734,003
1886	10,758,822	10,754,702	150,313,318	35,062 507
1887	10,625,413	10,296,041	188,737,616	44,871,519
1888	10,509,000	10,280,471	222,478,384	49,104,407
1889	10,504,903	10,262,301	368,633,232	57,976,593
1890	10,320 480	—	303,827,963	71,697,231
1891	10,000,000	10,000,000	286,691,829	66,173,259
1892	10,000,000	10,000,000	308,389,960	61,905,652
1893	10,000,000	10,000,000	474,117,505	80,013,852
1894	10,000,000	10,000,000	450,819,214	86,151,515
1895	8,000,000	8,000,000	518,363,525	91,897,575
1896	—	—	523,411,974	105,720,154
1897	—	—	274,158,846	28,264,169
1898	—	—	58,551,264	606,749

ADVANCES.

Year.	Bills Discounted.		Total.	
	Amount Transacted.	Balance.	Amount Transacted.	Balance.
1873... ...	—	3,430	—	2,896,359
1874... ...	—	3,245	—	2,387,177
1875... ...	—	130,635	—	2,590,833
1876... ...	—	58,259	—	10,167,933
1877... ...	—	31,772	—	18,468,072
1878... ...	—	94,875	—	31,924,939
1879... ...	9,868,363	383,115	—	40,664,891
1880... ...	20,947,189	1,283,593	198,706,818	44,794,334
1881... ...	27,544,285	1,133,705	241,860,669	46,891,077
1882... ...	26,132,094	1,467,089	231,403,380	49,002,092
1883... ...	25,634,033	2,170,684	201,998,697	44,901,219
1884... ...	38,536,382	3,009,346	205,591,657	49,009,899
1885... ...	27,883,651	3,069,066	176,016,925	46,321,346
1886... ...	43,365,569	3,772,291	204,437,709	49,589,500
1887... ...	67,942,433	5,299,158	267,305,462	60,466,718
1888... ...	78,386,614	7,572,743	311,373,998	66,957,621
1889... ...	99,775,103	8,306,531	378,913,238	76,545,525
1890... ...	111,425,607	—	425,574,050	—
1891... ...	124,468,416	—	421,116,245	—
1892... ...	158,456,633	—	476,846,623	—
1893... ...	229,439,293	—	613,656,798	—
1894... ...	275,353,347	—	736,172,561	—
1895... ...	290,064,409	26,305,513	816,427,934	126,203,088
1896... ...	308,773,414	20,168,813	832,185,388	125,888,967
1897... ...	176,684,760	—	450,843,606	—
1898... ...	55,958,225	341,046	114,509,489	947,795

TABLE III.—BANK OF JAPAN.

DEPOSITS.

(unit of *yen*).

Year.	Authorized Capital.	Paid up Capital.	Reserves.	Deposits. Government Funds and Government Deposits. Amount Transacted.	Deposits. Government Funds and Government Deposits. Balance.
1882... ...	10,000,000	2,000,000	—	—	—
1883... ...	10,000,000	4,000,000	3,800	21,908,811	4,696,436
1884... ...	10,000,000	5,000,000	10,500	131,718,159	14,360,228
1885... ...	10,000,000	5,000,000	372,700	204,873,886	31,581,618
1886... ...	10,000,000	5,000,000	445,700	443,024,929	36,500,155
1887... ...	20,000,000	10,000,000	4,306,200	642,670,941	31,206,958
1888... ...	20,000,000	10,000,000	4,494,700	612,073,872	25,572,502
1889... ...	20,000,000	10,000,000	4,759,700	642,981,456	31,631,494
1890... ...	20,000,000	10,000,000	5,240,000	40,663,208	811,239
1891... ...	20,000,000	10,000,000	5,910,000	49,066,469	2,483,701
1892... ...	20,000,000	10,000,000	6,350,000	57,631,953	4,085,444
1893... ...	20,000,000	10,000,000	7,072,500	50,251,233	1,618,327
1894... ...	20,000,000	10,000,000	7,442,500	70,591,897	3,192,232
1895... ...	30,500,000	22,000,000	8,542,500	118,812,360	4,714,539
1896... ...	30,500,000	22,000,000	9,100,000	412,373,330	193,709,354
1897... ...	30,500,000	22,000,000	10,800,000	925,123,261	74,288,063
1898... ...	30,000,000	30,000,000	12,570,000	710,205,718	25,713,412
1899... ...	30,000,000	30,000,000	13,570,000	540,458,915	69,732,850
1900... ...	30,000,000	30,000,000	14,850,000	217,533,432	33,230,790
1901... ...	30,000,000	30,000,000	15,950,000	374,069,114	17,599,292
1902... ...	30,000,000	30,000,000	16,600,000	349,433,124	15,524,410

DEPOSITS.

Year.	Private Deposits.		Total.	
	Amount Transacted.	Balance.	Amount Transacted.	Balance.
1882...	647,612	305,613	647,612	305,613
1883...	15,293,608	1,707,951	37,209,419	6,404,387
1884	27,889,193	759,131	159,607,352	15,119,359
1885...	13,884,219	1,324,069	218,758,102	32,905,687
1886...	22,712,368	329,450	465,737,297	32,829,605
1887...	27,574,974	677,981	670,245,915	31,884,939
1888...	39,979,793	665,865	652,053,665	26,238,367
1889...	19,876,981	242,808	662,858,437	31,674,302
1890...	159,320,310	6,315,287	199,985,518	7,126,526
1891...	138,352,867	3,246,794	187,419,356	5,730,495
1892...	219,359,557	4,706,974	276,991,510	8,792,418
1893...	261,998,049	1,969,578	312,249,282	3,587,905
1894...	271,152,072	1,726,291	341,743,969	4,918,523
1895...	421,853,071	1,939,370	440,665,431	6,653,909
1896...	964,835,605	1,408,318	1,377,208,935	195,117,672
1897...	1,039,822,453	3,821,937	1,964,945,714	78,110,000
1898...	1,015,199,006	1,497,135	1,725,404,724	27,210,547
1899...	1,282,760,830	4,938,725	1,823,219,745	74,671,575
1900...	1,756,602,168	2,027,234	1,974,135,600	35,258,024
1901...	1,627,032,997	2,557,762	2,001,102,111	20,157,054
1902...	1,948,621,563	3,363,388	2,298,054,687	18,887,790

TABLE IV.—BANK OF JAPAN.

(unit of *yen*).

LOANS.

Year.	Loans to the Government.		Other Loans.	
	Amount Transacted.	Balance.	Amount Transacted.	Balance.
1882...	—	—	935,000	777,300
1883...	1,500,000	1,000,000	4,827,050	691,700
1884...	2,000,000	—	6,198,775	1,412,795
1885...	10,159,000	1,050,000	35,793,962	13,971,824
1886...	2,414,710	566,687	63,732,702	19,189,875
1887...	2,899,035	1,854,603	83,092,912	25,181,924
1888...	8,735,141	3,538,972	95,071,157	19,175,024
1889...	22,061,334	774,718	91,885,034	17,071,984
1890...	22,000,000	22,000,000	86,653,225	15,823,831
1891...	22,000,000	22,000,000	111,730,549	11,747,563
1892...	22,000,000	22,000,000	107,699,568	8,460,441
1893...	22,000,000	22,000,000	108,486,071	10,060,427
1894...	43,500,000	37,500,000	163,299,642	16,564,613
1895...	71,500,000	63,500,000	257,025,696	29,327,418
1896...	129,033,875	72,000,000	389,277,271	42,243,642
1897...	89,050,828	28,831,132	588,596,044	53,048,444
1898...	72,851,132	22,000,000	713,266,508	33,270,570
1899...	22,000,000	22,000,000	702,058,929	16,731,979
1900...	38,000,000	34,000,000	523,235,302	14,477,675
1901...	96,000,000	62,000,000	322,780,611	9,348,602
1902...	99,000,000	50,000,000	274,280,284	5,323,178

LOANS.

Year	Bills Discounted.		Total.	
	Amount Transacted.	Balance.	Amount Transacted.	Balance.
1882...	52,800	—	987,800	477,300
1883...	1,594,200	555,550	7,921,250	2,247,200
1884...	11,124,007	1,990,848	19,322,782	3,403,643
1885...	6,015,858	1,314,567	51,958,820	16,336,391
1886...	10,870,104	3,559,336	77,017,516	23,315,898
1887...	24,342,496	5,498,639	110,334,443	32,535,166
1888...	26,429,999	5,616,101	130,236,297	28,330,097
1889...	40,091,309	11,961,995	154,037,677	29,808,697
1890...	77,547,370	21,562,322	186,200,595	59,386,153
1891...	76,725,843	20,350,203	210,456,395	54,097,766
1892...	63,819,821	16,437,433	193,419,389	46,897,974
1893...	77,841,360	24,563,815	208,327,431	56,624,242
1894	112,467,246	20,037,184	319,266,888	74,101,797
1895...	129,639,502	34,690,723	458,165,198	127,518,141
1896...	212,580,969	49,344,429	730,892,115	163,598,071
1897...	270,192,385	56,307,428	947,839,257	138,187,004
1898...	287,746,027	55,524,621	1,073,863,667	110,795,191
1899...	419,206,172	108,141,186	1,143,265,101	146,873,165
1900...	588,249,090	97,558,216	1,149,484,392	146,035,891
1901...	505,893,327	46,576,059	924,673,938	117,924,661
1902...	274,635,000	50,763,487	647,915,284	16,086,665

TABLE V.—YOKOHAMA SPECIE BANK.

DEPOSITS.

(unit of *yen*).

Year.	Authorized Capital.	Paid up. Capital.	Reserves.	Deposits. Government Funds and Deposits. Amount Transacted.	Balance.
1880	6,000,000	3,000,000	—	4,641,256	2,105,434
1881	6,000,000	3,000,000	49,300	10,383,226	3,156,259
1882	6,000,000	3,000,000	114,133	11,346,354	2,957,122
1883	6,000,000	3,000,000	621,662	22,522,086	11,977,899
1884	6,000,000	3,000,000	500,003	35,657,475	16,818,905
1885	6,000,000	3,000,000	865,995	57,849,050	15,516,990
1886	6,000,000	3,000,000	1,373,123	81,474,282	16,696,445
1887	6,000,000	4,500,000	3,337,700	49,816,076	10,891,165
1888	6,000,000	4,500,000	3,820,468	58,047,466	13,675,585
1889	6,000,000	4,500,000	3,904,661	21,437,636	5,291,837
1890	6,000,000	4,500,000	3,767,334	8,890,845	539,342
1891	6,000,000	4,500,000	3,947,600	2,005,232	483,404
1892	6,000,000	4,500,000	3,550,085	2,057,775	407,889
1893	6,000,000	4,500,000	3,812,958	2,248,631	384,192
1894	6,000,000	4,500,000	4,053,634	2,555,607	434,359
1895	6,000,000	4,500,000	4,336,634	2,361,327	269,290
1896	12,000,000	6,000,000	6,118,259	2,202,528	245,834
1897	12,000,000	9,000,000	6,798,260	1,827,439	130,449
1898	12,000,000	10,500,000	7,403,126	3,139,878	159,660
1899	24,000,000	12,000,000	8,016,038	4,951,848	2,103,501
1900	24,000,000	18,000,000	8,678,516	8,910,490	408,421
1901	24,000,000	18,000,000	9,035,059	7,480,675	427,664
1902	24,000,000	18,000,000	9,837,237	7,082,166	582,871

DEPOSITS.

Year.	Private Deposits. Amount Transacted.	Private Deposits. Balance.	Total. Amount Transacted.	Total. Balance.
1880	19,530,221	1,081,612	24,171,480	3,187,046
1881	35,319,098	857,896	45,702,324	4,014,155
1882	40,081,297	892,132	51,427,651	3,849,254
1883	55,954,472	1,764,163	78,476,558	13,742,062
1884	83,131,834	4,009,979	118,789,309	20,828,884
1885	89,954,554	1,046,932	147,803,604	16,563,922
1886	37,999,849	776,263	119,474,131	17,472,708
1887	54,029,432	1,866,811	103,845,508	12,757,976
1888	62,576,176	1,796,347	120,623,642	15,471,932
1889	63,101,186	1,851,317	84,538,822	7,143,154
1890	84,470,683	4,192,300	93,361,528	4,731,642
1891	74,698,326	5,049,068	76,703,558	5,532,472
1892	92,742,630	2,334,872	94,800,405	2,742,761
1893	112,666,758	6,038,212	114,915,389	6,422,404
1894	236,685,116	10,567,986	239,240,723	11,002,345
1895	320,052,114	12,781,678	322,413,441	13,050,968
1896	553,834,602	9,940,167	556,037,130	18,186,001
1897	671,626,922	36,003,300	673,454,361	36,133,749
1898	832,365,993	40,452,774	835,505,871	40,612,434
1899	1,004,821,868	71,388,242	1,009,773,716	73,491,743
1900	878,613,934	52,570,533	887,524,424	52,978,954
1901	844,045,269	46,083,183	851,534,944	46,510,847
1902	979,952,965	58,461,249	987,035,131	59,044,420

TABLE VI.—YOKOHAMA SPECIE BANK.

LOANS.

(unit of *yen*).

LOANS.

Year.	Loans to the Government.		Other Loans.	
	Amount Transacted.	Balance.	Amount Transacted.	Balance.
1880	—	—	12,528,797	2,738,921
1881	—	—	20,011,304	3,454,045
1882	—	—	22,511,748	3,205,823
1883	867,829	—	29,663,508	4,659,214
1884	4,971,947	—	45,891,433	6,894,238
1885	4,967,537	102,603	56,378,854	5,224,119
1886	2,462,845	6,591	35,877,886	4,678,487
1887	—	—	41,609,803	4,945,084
1888	—	—	42,571,428	4,766,827
1889	—	—	39,500,255	4,890,914
1890	—	—	34,755,173	4,642,850
1891	—	—	40,928,849	4,550,902
1892	—	—	45,480,763	4,118,128
1893	—	—	39,541,717	5,912,970
1894	—	—	57,331,298	4,846,000
1895	—	—	64,095,000	4,365,166
1896	—	—	139,568,886	8,696,598
1897	—	—	148,408,027	4,912,124
1898	—	—	*271,882,772	*20,668,929
1899	—	—	*358,498,736	*21,482,246
1900	—	—	282,461,246	26,506,663
1901	—	—	294,056,195	25,496,825
1902	—	—	359,412,906	31,693,236

LOANS.

Year.	Bills Discounted.		Total.	
	Amount Transacted.	Balance.	Amount Transacted.	Balance.
1880	454,241	87,910	12,983,038	2,826,831
1881	1,163,308	128,744	21,174,612	3,582,789
1882	308,157	20,000	22,819,905	3,225,823
1883	360,994	18,500	30,892,331	4,677,714
1884	1,738,574	338,348	52,601,954	7,232,586
1885	2,955,864	637,154	64,302,255	5,963,876
1886	8,734,770	1,515,473	47,075,501	6,200,551
1887	38,311,386	2,007,521	79,921,189	6,952,605
1888	59,037,385	590,686	101,608,813	5,357,513
1889	33,934,785	438,275	73,435,040	5,329,189
1890	42,901,189	2,125,904	77,656,362	6,768,754
1891	44,617,260	2,433,383	85,546,109	6,984,285
1892	50,300,806	1,407,497	95,781,569	5,525,625
1893	52,530,482	2,396,605	92,072,199	8,309,575
1894	72,099,903	2,957,089	129,431,201	7,803,089
1895	82,301,235	4,286,297	146,396,235	8,681,463
1896	154,718,737	6,033,502	294,287,623	14,730,100
1897	197,840,904	9,313,763	346,248,931	14,225,887
1898	230,659,018	12,726,776	502,541,790	33,395,705
1899	223,727,051	12,423,426	582,225,787	32,905,675
1900	160,597,339	18,305,351	443,058,585	44,812,014
1901	115,655,641	9,021,841	409,711,836	34,518,666
1902	73,028,653	8,305,622	432,441,559	39,998,858

TABLE VII.—HYPOTHEC BANK OF JAPAN.

(*Kangyō Ginkō*).

(unit of *yen*).

Year.	Authorized Capital.	Paid up Capital.	Reserves.	Loans. Amount Transacted.	Loans. Balance.	Debentures Issued.
1897	10,000,000	2,500,000	—	1,376,012	1,376,012	—
1898	10,000,000	2,500,000	7,361	6,776,609	6,706,734	4,972,100
1899	10,000,000	2,500,000	34,003	9,062,816	8,774,842	7,328,360
1900	10,000,000	2,500,000	70,926	12,236,256	11,650,631	9,640,880
1901	10,000,000	2,500,000	135,926	14,463,861	14,048,578	13,378,420
1902	10,000,000	3,250,000	210,926	18,560,174	17,320,102	14,240,960

TABLE VIII.—LOCAL HYPOTHEC BANKS.

(unit of *yen*).

Year.	No.	Authorized Capital.	Paid up Capital.	Reserves.	Deposits. Amount Transacted.	Deposits. Balance.
1897	6	3,850,000	962,500	—	—	—
1898	41	25,620,000	8,798,020	1,422	962,686	300,459
1899	45	27,920 000	15,980,365	82,480	2,647,296	1,222,815
1900	46	28,370,000	22,923,485	324,012	9,555,687	2,147,058
1901	46	28,370,000	26,100,000	793,157	14,129,373	3,421,133
1902	46	28,370,000	27,657,234	1,440,714	18,275,899	4,004,790

Year.	Loans. Amount Transacted.	Loans. Balance.	Debentures Issued.
1897	—	—	—
1898	4,356,537	4,221,119	—
1899	12,717,549	12,063,021	530,000
1900	20,822,745	19,200,809	630,000
1901	25,675,396	23,065,850	1,023,900
1902	38,418,801	25,114,438	2,011,530

TABLE IX.—HOKKAIDŌ COLONIZATION BANK.

(unit of *yen*).

Year.	Authorized Capital.	Paid up Capital.	Reserves.	Deposits. Amount Transacted.	Deposits. Balance.	Loans. Amount Transacted.	Loans. Balance.
1900.....	3,000,000	1,050,000	2,343	276,466	53,951	710,757	703,544
1901.....	3,000,000	2 098,400	15,248	1,134,916	219,230	1,698,450	1,501,606
1902.....	3,000,000	2,098,400	76,400	2,100,000	400,547	2,918,918	2,102,857

TABLE X.—BANK OF FORMOSA.

DEPOSITS.

(unit of *yen*).

Year.	Authorized Capital.	Paid up Capital.	Reserves.	Deposits. Government Funds and Deposits. Amount Transacted.	Deposits. Government Funds and Deposits. Balance.
1899	5,000,000	1 250,000	—	5,618	2,810
1900	5,000,000	1,250,000	17,900	901,205	2 061
1901	5,000,000	1,250,000	77,900	173,561	1,410
1902	5,000,000	2,500,000	140,400	153,814	—

DEPOSITS.

Year.	Deposits. Amount Transacted.	Deposits. Balance.	Total Amount Transacted.	Total Balance.
1899	7,582,171	965,410	7,587,789	968,220
1900	40,055,575	4,974,275	40,956,780	4,976,336
1901	44,342,027	4,539,771	44,479,588	4,541,181
1902	59,308,450	6,470,529	59,462,264	6,470,816

TABLE XI.—BANK OF FORMOSA.

LOANS.

(unit of *yen*).

LOANS.

Year.	Loans to Government. Amount Transacted.	Loans to Government. Balance.	Other Loans. Amount Transacted.	Other Loans. Balance.
1899	2,500,000	2,500,000	1,000,252	267,380
1900	8,200,000	6,200,000	5,094,145	414,917
1901	6,700,000	5,200,000	6,231,433	531,463
1902	7,350,000	6,850,000	8,514,772	963,785

Year.	Loans.				Debentures Issued.
	Bills Discounted.		Total.		
	Amount Transacted.	Balance.	Amount Transacted.	Balance.	
1899	1,209,694	607,253	4,709,946	3,374,633	1,834,917
1900	7,892,515	1,057,373	21,186,660	7,672,290	3 690,892
1901	12,199,065	1,256,976	25,130,498	6,988,439	2,943,751
1902	16,271,978	2,174,125	32,136,750	9,987,910	3,977,349

TABLE XII.—JAPAN INDUSTRIAL BANK.

(*Kōgyō Ginkō*).

(unit of *yen*).

Year.	Authorized Capital.	Paid up Capital.	Reserves.	Deposits.		Loans.	
				Amount Transacted.	Balance.	Amount Transacted.	Balance.
1902.....	10,000,000	2,500,000	1,148	8,867,606	1,108,213	4,497,108	3,237,658

TABLE XIII.—ORDINARY BANKS.

DEPOSITS.

(unit of *yen*).

Year.	Number.	Amount Capital.	Paid up Capital.	Reserves.	Deposits. Government Funds and Public Money.	
					Amount Transacted.	Balance.
1887.....	221	—	18,896,061	—	—	6,113,522
1888.....	195	—	15,790,259	4,132 412	—	5,529,442
1889.....	218	—	17,472,170	4,735,433	—	6,615,947
1890.....	222	—	18,976,622	5,039 875	—	4,501,727
1891.....	265	—	22,142,721	5,523,617	—	3,242,972
1892.....	270	—	22,356,177	3,214,250	—	4,864,208
1893.....	604	—	31,030,248	2,813,666	31,362,139	2,807,568
1894.....	700	—	37,410,781	4,141,507	63,246,082	2,656,402
1895.....	792	—	49,919,654	5,693,951	76,319,016	2,866,666
1896.....	1,005	142,714,944	88,974,847	8,947,748	88,785,022	6,499,052
1897.....	1,223	224,971,674	149,887,838	13,407,842	143,937 350	11,979,378
1898.....	1,444	276,839 734	189 439,761	20,214 846	277,738,840	16,945,051
1899.....	1,561	296,388,809	209,973,431	27,732,597	187,717,686	12,527,346
1900.....	1,802	352,729,770	245,158,916	33,032,336	179,480,814	12,808,911
1901.....	1,867	365,031,900	251,700,369	38,868,161	165,165,118	11,501,826

DEPOSITS.

Year.	Private Deposits.		Savings Deposits.		Total.	
	Amount Transacted.	Balance.	Amount Transacted.	Balance.	Amonnt Transacted.	Balance.
1887...	—	15,644,295	—	—	—	—
1888...	—	14,527,993	—	—	—	—
1889...	—	16,228,849	—	2,059,948	—	24,904,444
1890...	—	18,409,747	—	2,426,504	—	25,337,978
1891...	—	17,820,290	—	3,630,233	—	24,693,493
1892...	—	22,899,477	—	5,475,000	—	33,238,685
1893...	210,633,254	35,618,642	—	—	241,995,393	38,426,210
1894 ..	486,512,288	46,540,017	—	—	549,758,370	49,196,419
1895...	766,259,957	81,386,199	—	—	842,575,973	84,252,865
1896	1,469,959,999	135,438,038	—	—	1,558,745,021	141,937,090
1897...	2 241,366,166	195,761,906	—	—	2,385,303,516	207,741,284
1898...	3,115,305,708	270,100,184	—	—	3,393,044,548	289,045,235
1899...	4,305,218,581	379,729,434	—	—	4,492,936,267	392,256,780
1900 ..	5,491,031,118	423,970,909	—	—	5,670,511,932	436,779,820
1901...	5,192,383,459	438,684,701	—	—	5,357,548,577	450,186,527

TABLE XIV.—ORDINARY BANKS.

LOANS.

(unit of *yen*).

LOANS.

Year.	Loans.		Bills Discount.		Total.	
	Amount Transacted.	Balance.	Amount Transacted.	Balance.	Amount Transacted.	Balance.
1887.	—	—	—	—	—	—
1888.	—	28,697,174	23,705,458	—	—	—
1889.	—	36,698,170	17,237,568	—	—	—
1890.	—	39,537,835	36,335,987	—	—	—
1891.	—	40,922,441	42,148,241	—	—	—
1892.	—	33,882,673	54,879,103	—	—	—
1893.	146,119,086	49,083,472	67,707,985	—	213,827,071	—
1894.	253,074,134	59,178,194	96,357,015	—	349,431,149	—
1895.	380,898,955	89,165,458	198,242,173	—	579,141,124	—
1896.	761,497,455	157,200,254	458,129,582	—	1,219,627,037	—
1897.	1,297,402 583	241,899,875	730,434,151	—	2,027,836,734	—
1898.	1,576,200,337	294,192,883	913,186,574	139,311,447	2,489,386,911	433,504,330
1899.	1,825,389,469	311,349,289	1,584,252,168	261,771,981	3,409,641,637	573,121,270
1900.	2,114,925,789	351,550,653	2,119,255,332	301,647,126	4,234,201,121	653,197,779
1901.	1,901,107,405	356,356,556	1,831,516,006	272,015,225	3,732,623,411	628,371,781

TABLE XV.—SAVINGS BANKS.

DEPOSITS.

(unit of *yen*).

Year.	Number.	Authorized Capital.	Paid up Capital.	Reserves.	Savings Deposits.	
					Amount Transacted.	Balance.
1893.....	24	—	566,500	25,113	10,760,771	6,035,455
1894.....	31	—	683,000	63,013	17,661,594	6,871,327
1895.....	92	5,290,000	1,889,355	104,421	27,325,886	12,178,268
1896.....	193	12,172,500	5,039,381	303,696	51,729,525	18,214,200
1897.....	312	20,199,000	10,698,093	812,531	75 866,192	25,393,453
1898.....	418	26,699,300	14,966,242	1,371,026	86,109,383	30,042,074
1899.....	531	34,930,300	19,979,151	2,188,083	119,033,523	44,748,884
1900.....	681	48,465,300	26,834,957	2,907,597	149,235.683	49,458,580
1901.....	714	50,281,300	29,608,687	3,462,264	144,028,072	44,021,626

Year.	Ordinary Deposits.		Total.	
	Amount Transacted	Balance.	Amount Transacted.	Balance.
1893	—	—	10,760,771	6,035,455
1894	—	—	17,661,594	6,871,327
1895	—	—	27,325,886	12,178,268
1896	15,423,123	2,459,608	67,152,648	20,673,808
1897	48,169,545	7,651,500	124,035.737	33,044,953
1898	93 659,013	12 665,035	179,768,396	42,707,109
1899	171,211,852	22,892,281	290,245,375	67,641,165
1900	280,189,418	29,423,061	429,425,101	78,881,641
1901	237,431,192	30,188,630	381,459,264	74,210,256

TABLE XVI.—SAVINGS BANKS.

LOANS.

(unit of *yen*).

Year.	Loans.		Bills Discounted.		Total.	
	Amount Transacted.	Balance.	Amount Transacted.	Balance.	Amount Transacted.	Balance.
1893.....	1,802,716	1,066,330	2,356,356	—	4,159,072	—
1894.....	1,776,144	675,061	6,256,976	—	8,033,120	—
1895.....	6,409,067	2,728,006	13,536,092	—	19.945,159	—
1896.....	25,162,385	8,088,206	31,870,677	—	57,033,062	—
1897.....	50,699,695	16,569,899	46,468,726	5,790,376	97,168,421	22,360,275
1898.....	72,884,013	23,576,480	49,887 394	7,909,428	122,648,639	31,485,908
1899.....	106,226,648	30,201,705	97,285,819	17,669,320	203,512,467	47,871,052
1900.....	131,302,787	38,393,253	156,120,870	25,024,609	287,423,657	63,417,862
1901.....	127,170,469	41,117,028	119,392,480	19,542,862	246,562 949	60,659,890

CHAPTER VI.—Clearing Houses.

Introductory—Various Clearing Houses.

I. INTRODUCTORY.

General Remarks.—Though the custom of using commercial bills in trade existed long ago, it was only in recent years that a clearing house modelled on the Western system was established in Japan. The Osaka Clearing House established in December 1879 was the poineer institution of this kind in Japan. Then followed the Clearing Houses of Tokyo, Kobe, Yokohama, and Kyoto. All these establishments partly partake in their organization and working system of the Houses of London and New York. The Japanese clearing houses business, though more or less subjected to vicissitudes, has, on the whole, made a satisfactory progress, as the perusal of the following section will show.

1. The Tokyo Clearing-House.—The Tokyo Clearing-House commenced its business at the end of 1887, with a perceptible good result, but the subsequent development of banking business necessitated the organization of the clearing-house, and in 1881 the new clearing-house, as it now stands was established. Its organization was mainly based on those of clearing-houses in Europe and America. The number of associated banks at the end of 1901 was 36, besides the Bank of Japan.

2. The Kyoto Clearing-House.—The Kyoto Clearing-House was founded in 1888; the number of associated banks in December 1901 was 21.

3. The Ōsaka Clearing-House.—The Ōsaka Clearing-House founded in 1879 is the first of all clearing-houses established in our country. In Ōsaka, the centre of trade in our country since old time, checks and bills were in use long before the Restoration. The number of associated banks in December, 1901, was 33.

4. The Kobe Clearing-House.—The Kobe Clearing-House

was founded in 1897; the number of associated banks was 16 in December 1901.

5. THE YOKOHAMA CLEARING-HOUSE.—The Yokohama Clearing-House was founded in 1900; it had 12 associated banks in December, 1901.

The Nagoya Clearing-House is the latest establishment, having been founded in September, 1902. At the end of that year it had 19 associated banks.

II. VARIOUS CLEARING HOUSES.

AMOUNT OF BILLS CLEARED AT VARIOUS CLEARING HOUSES.

Year.	Tokyo.		Ōsaka.	
	Number of Bills Cleared.	Amount Cleared.	Number of Bills Cleared.	Amount. Cleared.
1879	—	—	—	2,835,892
1880	—	—	—	37,457,435
1881	—	—	—	48,065,853
1882	—	—	—	46,487,510
1883	—	—	—	31,385,877
1884	—	—	—	22,656,066
1885	—	—	—	17,737,207
1886	—	—	—	22,074,700
1887	1,987	1,232,186	—	24,072,164
1888	25,289	12,281,949	94,797	28,898,848
1889	36,524	19,559,401	112,821	34,187,151
1890	42,301	20,206,095	123,472	37,247,780
1891	59,521	67,595,423	137,899	39,122,501
1892	97,190	113,576,595	161,489	49,610,071
1893	134,505	148,018,871	174,035	63,600,661
1894	172,189	185,597,497	180,892	67,543,807
1895	223,123	289,102,424	208,622	79,654,118
1896	349,423	417,425,507	324,816	138,409,333
1897	442,034	552,890,212	308,624	160,967,476
1898	792,151	790,247,459	484,539	225,980,828
1899	1,251,921	1,095,805,417	760,976	376,853,277
1900	1,830,607	1,405,449,664	1,033,143	523,552,745
1901	1,860,156	1,268,802,079	1,229,327	528,122,083
1902	2,210,388	1,350,791,066	1,550,430	663,659,703

Year.	Tokyo. Number of Bills Cleared.	Tokyo. Amount Cleared.	Yokohama. Number of Bills Cleared.	Yokohama. Amount Cleared.
1879	—	—	—	—
1880	—	—	—	—
1881	—	—	—	—
1882	—	—	—	—
1883	—	—	—	—
1884	—	—	—	—
1885	—	—	—	—
1886	—	—	—	—
1887	—	—	—	—
1888	—	—	—	—
1889	—	—	—	—
1890	—	—	—	—
1891	—	—	—	—
1892	—	—	—	—
1893	—	—	—	—
1894	—	—	—	—
1895	—	—	—	—
1896	—	—	—	—
1897	—	—	—	—
1898	230,858	69,034,033	—	—
1899	406,390	133,616,955	—	—
1900	527,033	167,566,438	215,441	348,306,775
1901	538,199	145,905.182	237,925	390,516,606
1902	610,277	155,957,015	257,165	416,126,576

Year.	Kobe. Number of Bills Cleared.	Kobe. Amount Cleared.	Nagoya. Number of Bills Cleared.	Nagoya. Amount Cleared.
1879	—	—	—	—
1880	—	—	—	—
1881	—	—	—	—
1882	—	—	—	—
1883	—	—	—	—
1884	—	—	—	—
1885	—	—	—	—
1886	—	—	—	—
1887	—	—	—	—
1888	—	—	—	—
1889	—	—	—	—
1890	—	—	—	—
1891	—	—	—	—
1892	—	—	—	—
1893	—	—	—	—
1894	—	—	—	—
1895	—	—	—	—
1896	—	—	—	—
1897	30,789	27,633,168	—	—
1898	104,790	100,843,119	—	—
1899	123,971	115,914,379	—	—
1900	175,679	168,228,769	—	—
1901	191,848	202,658,853	—	—
1902	246,406	251,656,959	87,884	43,083,087

Tables for Reference.

For convenience of reference the following tables about the world's output of gold, quotation of gold bullion in London, and some other similar figures will be given below :—

WORLD'S OUTPUT OF GOLD AND SILVER.

(Relative price of gold and silver).

Year.	Ounces.	Ounces.	Relative Price.
1868	6,270,086	43,051,583	15.59
1869	6,270,086	43,051,583	15.60
1870	6,270,086	43,051,583	15.57
1871	5,591,014	63,317,014	15.57
1872	5,591,014	63,317,014	15.63
1873	4,653,675	63,267,187	15.92
1874	4,390,031	55,300,781	16.17
1875	4,716,563	62,261,719	16.59
1876	5,016,488	67,753,125	17.88
1877	5,512,196	62,679,916	17.22
1878	5,761,114	73,385,451	17.94
1879	5,262,174	74,383,495	18.40
1880	5,148,880	74,795,273	18.05
1881	4,983,742	79,020,872	18.16
1882	4,934,086	86,472,091	18.19
1883	4,614,588	89,175,023	18.64
1884	4,921,169	81,567,801	18.57
1885	5,245,572	91,609,959	19.41
1886	5,135,679	93,297,290	20.78
1887	5,116,861	96,123,586	21.13
1888	5,330,775	108,827,606	21.99
1889	5,973,790	120,213,611	22.10
1890	5,749,306	126,095,062	19.76
1891	6,320,194	137,170,919	20.92
1892	7,094,266	153,151,762	23.72
1893	7,618,811	165,472,621	26.47
1894	8,764,362	164,610,394	32.56
1895	9,615,190	167,500,960	31.61
1896	9,783,914	157,061,370	30.65
1897	11,420,068	160,421,082	34.34
1898	13,877,806	169,055,253	35.01
1899	14,859,285	167,577,533	34.36
1900	12,366,319	172,838,870	33.36
1901	Unknown	Unknown	34.67

QUOTATION OF GOLD BULLION IN LONDON.

(per 1 ounce).

Date.	Maximum. £.	s.	d.	Minimum. £.	s.	d.	Average. £.	s.	d.
Jan. 1897	3	17	10.5000	3	17	10.2500	3	17	10.4063
Feb. „	3	17	10.3750	3	17	10.3750	3	17	10.3750
Mar. „	3	17	10.0000	3	17	09.5000	3	17	09.8500
Apr. „	3	17	11.5000	3	17	11.0000	3	17	11.3750
May „	3	17	11.3750	3	17	10.7500	3	17	11.0625
June „	3	17	11.7500	3	17	11.1250	3	17	11.4500
July „	3	17	11.3750	3	17	11.1250	3	17	11.1875
Aug. „	3	17	11.5000	3	17	11.0000	3	17	11.2813
Sept. „	3	17	11.5000	3	17	11.0000	3	17	11.3750
Oct. „	3	17	11.7500	3	17	11.0000	3	17	11.5000
Nov. „	3	17	11.7500	3	17	11.7500	3	17	11.7500
Dec. „	3	18	00.0000	3	17	11.5000	3	17	11.7500
Average of Maximum and Minimum... ...	3	18	00.0000	3	17	09.5000	3	17	11.1136
Jan. 1898	3	17	11.0000	3	17	10.5000	3	17	10.8750
Feb. „	3	17	11.0000	3	17	09.5000	3	17	10.3125
Mar. „	3	17	10.7500	3	17	10.2500	3	17	10.6000
Apr. „	3	17	11.5000	3	17	09.7500	3	17	11.0000
May „	3	17	09.7500	3	17	09.0000	3	17	09.4063
June „	3	17	10.5000	3	17	09.7500	3	17	10.0000
July „	3	17	10.7500	3	17	10.2500	3	17	10.3750
Aug. „	3	17	10.7500	3	17	10.0000	3	17	10.2500
Sept. „	3	18	00.0000	3	17	10.2500	3	17	11.1875
Oct. „	3	17	11.3750	3	17	09.5000	3	17	10.4688
Nov. „	3	18	00.0000	3	17	09.5000	3	17	10.0500
Dec. „	3	18	00.0000	3	17	11.2500	3	17	11.6875
Averages of Maximum and Minimum... ...	3	18	00.0000	3	17	09.0000	3	17	10.5170
Jan. 1899	3	17	10.7500	3	17	09.5000	3	17	10.1250
Feb. „	3	17	09.5000	3	17	09.2500	3	17	09.3125
Mar. „	3	17	09.7500	3	17	09.2500	3	17	09.5500
Apr. „	3	17	09.5000	3	17	09.0000	3	17	09.2500
May „	3	17	09.0000	3	17	09.0000	3	17	09.0000
June „	3	17	09.0000	3	17	09.0000	3	17	09.0000
July „	3	17	09.5000	3	17	09.0000	3	17	09.2500

Date.	Maximum.			Minimum.			Average.		
	£.	s.	d.	£.	s.	d.	£.	s.	d.
Aug. „	3	17	09.0000	3	17	09.0000	3	17	09.0007
Sept. „	3	17	09.0000	3	17	09.0000	3	17	09.0000
Oct. „	3	17	09.0000	3	17	09.0000	3	17	09.0000
Nov. „	3	17	09.7500	3	17	09.2500	3	17	09.2500
Dec. „	3	17	09.2500	3	17	09.2500	3	17	09.2500
Averages of Maximum and Minimum... ...	3	17	10.7500	3	17	09.0000	3	17	09.2656
Jan. 1900	3	17	09.2500	3	17	09.0000	3	17	09.2500
Feb. „	3	17	09.2500	3	17	09.2500	3	17	09.2500
Mar. „	3	17	09.2500	3	17	09.2500	3	17	09.2500
Apr. „	3	17	09.2500	3	17	09.2500	3	17	09.2500
May „	3	17	09.2500	3	17	09.2500	3	17	09.2500
June „	3	17	10.5000	3	17	09.2500	3	17	09.8125
July „	3	17	10.7500	3	17	09.7500	3	17	10.5000
Aug. „	3	17	09.7500	3	17	09.7500	3	17	09.7500
Sept. „	3	17	10.2500	3	17	09.7500	3	17	10.0000
Oct. „	3	18	00.0000	3	17	10.2500	3	17	11.5000
Nov. „	3	18	00.0000	3	18	00.0000	3	18	00.0000
Dec. „	3	18	00.0000	3	18	00.0000	3	18	00.0000
Averages of Maximum and Minimum... ...	3	18	00.0000	3	17	09.2500	3	17	10.1510
Jan. 1901	3	18	00.0000	3	17	09.7500	3	17	10.8000
Feb. „	3	17	09.2500	3	17	09.2500	3	17	09.2500
Mar. „	3	17	09.2500	3	17	09.2500	3	17	09.2500
Apr. „	3	17	09.2500	3	17	09.2500	3	17	09.2500
May „	3	17	09.2500	3	17	09.2500	3	17	09.2500
June „	3	17	09.2500	3	17	09.2500	3	17	09.2500
July „	3	17	09.5000	3	17	09.2500	3	17	09.3500
Aug. „	3	17	09.7500	3	17	09.2500	3	17	09.3750
Sept. „	3	17	11.0000	3	17	10.7500	3	17	10.8750
Oct. „	3	17	11.8750	3	17	11.0000	3	17	11.5250
Nov. „	3	17	11.2500	3	17	09.1250	3	17	10.1563
Dec „	3	17	10.5000	3	17	09.7500	3	17	10.2500
Averages of Maximum and Minimum... ...	3	18	00.0000	3	17	09.1250	3	17	09.8818
Jan. 1902	3	17	10.6250	3	17	10.2500	3	17	10.5000
Feb. „	3	17	10.6250	3	17	09.5000	3	17	10.0625
Mar. „	3	17	09.5000	3	17	09.2500	3	17	09.4375

The foregoing table is based on the reports of the Yokohama Specie Bank.

QUOTATION OF SILVER BULLION IN LONDON.

Date.	Maximum.	Minimum.	Average.
	d.	*d.*	*d.*
Jan. 1893	38.5000	38.1250	38.1428
Feb. „	38.5000	38.2500	38.3587
Mar. „	39.1875	37.5625	38.1635
Apr. „	38.2500	37.8750	38.0208
May „	38.5625	37.6250	38.0926
June „	38.7500	31.2500	37.5182
July „	34.7500	30.5000	32.9900
Aug. „	34.8750	32.5000	33.8825
Sept. „	34.5000	33.8750	34.1450
Oct. „	34.1250	32.3750	33.7125
Nov. „	32.7500	31.5000	32.2344
Dec. „	32.3123	31.7500	32.0385
Averages of Maximum and Minimum	39.1875	30.5000	35.6083
Jan. 1894	31.7500	30.5000	31.3618
Feb. „	30.8125	27.5000	29.2865
Mar. „	27.8750	27.0625	27.2700
Apr. „	29.3750	27.8750	28.7552
May „	29.2500	28.0625	28.7153
June „	28.9375	28.3125	28.6500
July „	28.9375	28.4375	28.6549
Aug. „	30.5000	28.6875	29.3100
Sept. „	30.3125	29.1875	29.6513
Oct. „	29.5625	28.9375	29.1525
Nov. „	29.3125	28.3750	28.9740
Dec. „	28.5625	27.1875	27.7836
Averages of Maximum and Minimum	31.7500	27.0625	28.9637
Jan. 1895	27.4375	27.1875	27.3239
Feb. „	27.6875	27.2500	27.4810
Mar. „	29.2500	27.5625	28.1693
Apr. „	30.8750	29.7500	30.3825
May „	30.8750	30.2500	30.6500
June „	30.6875	30.1875	30.4505
July „	30.6250	30.1875	30.4864
Aug. „	30.5625	30.2500	30.3918

Date.	Maximum.	Minimum.	Average.
	d.	*d.*	*d.*
Sept. 1895	30.5625	30.4375	30.5287
Oct. „	31.3125	30.5625	30.9087
Nov. „	31.0000	30.6250	30.7980
Dec. „	30.6875	29.8750	30.4087
Averages of Maximum and Minimum	31.3125	27.1875	29.8317
Jan. 1896	30.8750	30.5000	30.6591
Feb. „	31.5625	30.7500	30.9948
Mar. „	31.5625	31.1250	31.3250
Apr. „	31.2500	30.8125	31.0650
May „	31.2500	30.9375	31.0745
June „	31.5625	31.1875	31.3950
July „	31.5000	31.3750	31.4514
Aug. „	31.3125	30.5000	30.9210
Sept. „	30.7500	30.0000	30.3809
Oct. „	30.7500	29.7500	30.0973
Nov. „	30.1875	29.7500	29.9375
Dec. „	30.0000	29.8750	29.9236
Averages of Maximum and Minimum	31.5625	29.7500	30.7663
Jan. 1897	29.8125	29.6875	29.7244
Feb. „	29.7500	29.6875	29.7173
Mar. „	29.6875	28.4063	29.0300
Apr. „	28.5000	28.2500	28.3725
May „	28.6250	27.5000	27.8341
June „	27.7500	27.5000	27.5924
July „	27.6875	26.3750	27.2750
Aug. „	26.6250	23.7500	25.0604
Sept. „	27.2500	23.7500	25.6399
Oct. „	27.5000	25.0000	26.5781
Nov. „	27.5000	26.2500	26.8293
Dec. „	27.7500	25.6875	26.7953
Averages of Maximum and Minimum	29.8125	23.7500	27.5374
Jan. 1898	26.7500	26.1250	26.4006
Feb. „	26.2500	25.6250	25.9158
Mar. „	26.0000	25.0000	25.4894
Apr. „	26.2500	25.6875	25.9099

Date.	Maximum.	Minimum.	Average.
	d.	*d.*	*d.*
May 1898	26.7500	25.8750	26.2981
June „	27.5000	26.6875	27.0817
July „	27.8750	27.0000	27.3269
Aug. „	27.8750	27.0625	27.4400
Sept. „	28.3125	27.6250	28.0150
Oct. „	28.2500	27.4375	27.9000
Nov. „	28.3125	27.6250	27.9583
Dec. „	27.6250	27.1250	27.4444
Averages of Maximum and Minimum	28.3125	25.0000	26.9316
Jan. 1899	27.6250	27.2500	27.4318
Feb. „	27.5000	27.3750	27.4402
Mar. „	27.6250	27.3750	27.4591
Apr. „	28.8750	27.3750	27.5677
May „	28.7500	28.0000	28.1643
June „	28.0625	27.6875	27.7837
July „	27.7500	27.6250	27.7043
Aug. „	27.8125	27.3750	27.6635
Sept. „	27.3750	27.0000	27.1875
Oct. „	27.0000	26.6250	26.7025
Nov. „	27.3125	26.7500	27.0378
Dec. „	27.2125	26.9375	27.1587
Averages of Maximum and Minimum	28.8750	26.6250	27.4418
Jan. 1900	27.6250	27.0000	27.2812
Feb. „	27.7500	27.3125	27.4948
Mar. „	27.6873	27.4375	27.5769
Apr. „	27.5000	27.3125	27.4167
May „	27.6230	27.4375	27.5601
June „	28.5625	27.5625	27.7861
July „	28.5625	27.7500	28.2452
Aug. „	28.3750	27.9375	28.1227
Sept. „	29.0625	28.4375	28.7825
Oct. „	30.1875	29.0625	29.5601
Nov. „	29.9375	29.4375	29.6536
Dec. „	29.8750	29.5000	29.6851
Averages of Maximum and Minimum	30.1875	27.0000	28.2638

Date.	Maximum.	Minimum.	Average.
	d.	*d.*	*d.*
Jan. 1901	29.4375	27.7500	29.0426
Feb. „	28.5000	27.8750	28.1196
Mar. „	28.1875	27.3125	27.9750
Apr. „	27.8750	26.9375	27.2909
May „	27.6250	27.1875	27.4306
June „	27.5625	27.3125	27.4225
July „	27.2500	26.8155	26.9745
Aug. „	27.1250	26.7500	26.9329
Sept. „	27.0000	26.8750	26.9583
Oct. „	26.9375	26.3750	26.6298
Nov. „	26.5625	25.3750	26.1425
Dec. „	25.7500	24.9375	25.4331
Averages of Maximum and Minimum	29.4375	24.9375	27.1916
Jan. 1902	26.1250	25.4375	25.6790
Feb. „	25.5000	25.3125	25.4239
Mar. „	25.4375	24.8125	25.0225

The foregoing table is based on the reports of the Yokohama Specie Bank.

QUOTATIONS OF FOREIGN EXCHANGE MARKET.

Date.	London per 1 *yen.*	Paris per 1 *yen.*	New York and San Francisco. per 100 *yen.*	Bombay per 100 *yen.*	Hongkong per 100 *yen.*	Shanghai per 100 *yen.*
	d.	*f.*	$	rupee.	$	*t.*
Jan. 1893 ...	32.7216	3.4377	66.2727	—	100.0000	71.5000
Feb. „ ...	32.7283	3.4383	66.4565	—	100.0000	71.5000
Mar. „ ...	32.5048	4.4192	66.0096	—	100.3606	71.8173
Apr. „ ...	32.4063	3.4013	65.8125	—	100.6354	72.3125
May „ ...	32.4444	3.4052	65.8889	—	100.3333	71.9722
June „ ...	31.9688	3.3706	64.9375	—	100.5000	71.8077
July „ ...	29.6851	3.1115	60.2356	—	100.0865	71.9135
Aug. „ ...	29.4792	3.1054	60.0509	—	99.7176	71.7037
Sept. „ ...	29.1425	3.0778	59.0750	—	100.0000	71.9600
Oct. „ ...	29.0950	3.0544	58.3350	—	99.9200	72.2450
Nov. „ ...	28.1198	2.9502	56.5521	—	99.7292	72.4063
Dec. „ ...	27.8654	2.9237	55.8269	—	99.9423	72.0000
Jan. 1894 ...	27.0881	2.8361	54.1761	—	100.0000	71.9773
beF. „ ...	25.4401	2.6683	50.8073	—	100.0000	71.3750

Date.	London per 1 *yen.*	Paris per 1 *yen.*	New York and San Francisco. per 100 *yen.*	Bombay per 100 *yen.*	Hongkong per 100 *yen.*	Shanghai per 100 *yen.*
	d.	*f.*	$	rupee.	$	*t.*
Mar. 1894 ...	23.7650	2.4872	48.8400	—	100.0000	71.7900
Apr. „ ...	24.7814	2.6000	50.3490	—	100.0000	72.2708
May „ ...	25.0208	2.6180	50.7731	—	100.0000	72.6850
June „ ...	24.9087	2.6050	50.5673	—	100.0000	72.7500
July „ ...	24.9543	2.6120	50.6587	—	99.2500	72.8269
Aug. „ ...	25.4977	2.6710	51.7130	—	99.2870	73.2500
Sept. „ ...	26.1125	2.7310	52.7250	—	99.5000	73.2500
Oct. „ ...	25.5601	2.6810	51.6538	—	99.5000	73.2500
Nov. „ ...	24.8125	2.6004	50.0521	—	99.5000	72.3650
Dec. „ ...	23.8558	2.4970	48.1731	—	98.8650	72.1440
Jan. 1895 ...	23.3125	2.4450	47.1250	—	98.0000	71.9375
Feb. „ ...	23.3152	2.4450	47.2170	—	99.1520	71.6090
Mar. „ ...	23.8565	2.5020	48.2150	—	99.5100	71.5000
Apr. „ ...	25.6050	2.6870	51.7600	—	99.5300	71.5000
May „ ...	25.5528	2.6960	52.1630	—	99.4570	71.1540
June „ ...	25.5500	2.6800	51.7900	—	99.3900	71.1200
July „ ...	25.6065	2.6820	51.9630	—	99.2280	71.6634
Aug. „ ...	25.8264	2.7080	52.4027	—	99.5000	71.4629
Sept. „ ...	26.1927	2.7430	53.1354	—	99.5000	71.5000
Oct. „ ...	26.5120	2.7850	53.7740	—	99.3940	71.7210
Nov. „ ...	26.2812	2.7580	53.1325	—	99.1850	71.8750
Dec. „ ...	25.4279	2.6680	51.7115	—	99.0000	71.5000
Jan. 1896 ...	25.5285	2.6742	52.0455	—	99.0000	71.5000
Feb. „ ...	26.0885	2.7298	53.1719	—	99.1875	71.5000
Mar. „ ...	26.6925	2.8058	54.2500	—	99.8700	71.8000
Apr. „ ...	26.5450	2.7868	53.8750	—	100.0000	72.2500
May „ ...	26.6250	2.7900	54.0000	—	100.2880	72.4520
June „ ...	26.6394	2.7953	54.0192	—	100.8270	72.7500
July „ ...	26.5949	2.7902	53.8796	—	100.4350	72.7500
Aug. „ ...	25.9952	2.7267	52.4952	—	99.3890	72.6635
Sept. „ ...	25.3025	2.6546	50.9150	—	99.0800	72.2850
Oct. „ ...	25.1971	2.6433	50.8990	—	99.0000	71.7981
Nov. „ ...	25.5272	2.6815	51.5842	—	99.5710	72.0652
Dec. „ ...	25.6505	2.6920	51.8704	—	99.9580	72.2361
Jan. 1897 ...	25.4531	2.6692	51.2046	165.7273	99.6023	72.2955
Feb. „ ...	25.3363	2.6590	51.1905	165.8571	99.7262	72.3333
Mar. „ ...	24.6082	2.5881	49.9423	162.8462	100.4712	72.6250
Apr. „ ...	24.3495	2.5528	49.3657	160.4400	100.5288	72.9615
May „ ...	23.9849	2.5115	48.6010	162.3269	100.0446	73.0000

Date.	London per 1 *yen.*	Paris per 1 *yen.*	New York and San Francisco. per 100 *yen.*	Bombay per 100 *yen.*	Hongkong per 100 *yen.*	Shanghai per 100 *yen.*
	d.	*f.*	$	rupee.	$	*t.*
June 1897 ...	23.8990	2.5015	48.4808	162.5600	99.5100	73.3200
July „ ...	23.9208	2.5015	48.4667	157.7321	100.5403	75.0583
Aug. „ ...	24.0625	2.5169	48.6683	154.0190	107.6480	82.0268
Sept. „ ...	24.1950	2.5308	48.8900	150.5200	108.3207	83.2351
Oct. „ ...	24.3225	2.5436	49.0250	154.3400	104.3947	77.2360
Nov. „ ...	24.3943	2.5425	48.9541	154.8958	103.9520	76.4760
Dec. „ ...	24.3125	2.5446	48.8750	157.6481	101.6600	74.6252
Jan. 1898 ...	24.2983	2.5457	48.8920	150.6590	103.0000	76.3636
Feb. „ ...	24.2500	2.5450	48.8750	151.2830	106.0326	78.5980
Mar. „ ...	24.2292	2.5461	48.9201	150.3240	106.7600	80.0200
Apr. „ ...	24.1611	2.5437	48.8221	151.4615	106.3557	79.7788
May „ ...	24.2380	2.5488	48.9422	150.0000	106.9040	80.3269
June „ ...	24.3125	2.5550	49.2163	150.3846	106.4615	80.0384
July „ ...	24.3125	2.5506	49.2500	151.3460	104.3846	78.3650
Aug. „ ...	24.3625	2.5538	49.2500	151.5000	104.2870	77.3055
Sept. „ ...	24.3625	2.5590	49.2500	151.3400	103.9300	75.8000
Oct. „ ...	24.3650	2.5620	49.2360	151.8080	104.1250	75.4620
Nov. „ ...	24.3125	2.5560	49.2500	151.0000	103.4270	74.8230
Dec. „ ...	24.4595	2.5700	49.4490	151.3330	103.4160	74.5190
Jan. 1899 ...	24.7357	2.5957	49.8579	152.3180	104.4091	75.5454
Feb. „ ...	24.8071	2.6000	49.9076	152.7830	104.5434	76.1630
Mar. „ ...	24.6025	2.5832	49.6800	153.0800	104.4000	76.8100
Apr. „ ...	24.6560	2.5875	49.9170	153.3330	104.0416	76.1666
May „ ...	24.6875	2.5900	50.0000	153.4810	103.5556	75.4440
June „ ...	24.6875	2.5900	50.0000	153.0000	103.5769	75.2110
July „ ...	24.6418	2.5900	50.0000	153.2110	103.5096	75.3700
Aug. „ ...	24.5986	2.5877	49.9470	153.4230	103.5865	75.2404
Sept. „ ...	24.4800	2.5734	49.6850	152.0200	103.8750	75.9250
Oct. „ ...	24.3825	2.5686	49.4650	151.1200	104.9800	76.4635
Nov. „ ...	24.4375	2.5700	49.0989	151.5000	104.3906	74.3801
Dec. „ ...	24.4183	2.5502	49.5817	151.5000	103.3557	73.5769
Jan. 1900 ...	24.3750	2.5630	49.5056	151.1590	102.9488	73.8010
Feb. „ ...	24.3750	2.5600	49.5000	151.2710	103.1042	74.2810
Mar. „ ...	24.2720	2.5481	49.2933	151.3850	103.0048	74.1010
Apr. „ ...	24.2500	2.5450	49.2500	151.5000	103.0052	74.0050
May „ ...	24.2500	2.5450	49.2500	151.5000	103.0000	73.9420
June „ ...	24.2500	2.5440	49.2500	151.5000	102.7692	73.7885
July „ ...	24.2837	2.5430	49.3173	151.0960	101.5481	72.1250
Aug. „ ...	24.3125	2.5450	49.3750	151.0000	100.6296	71.4720

Date.	London per 1 *yen.*	Paris per 1 *yen.*	New York and San Franciseo. per 100 *yen.*	Bombay per 100 *yen.*	Hongkong per 100 *yen.*	Shanghai per 100 *yen.*
Sept. „ ...	24.3125	2.5458	49.3750	151.9000	101.5400	70.7700
Oct. „ ...	24.3125	2.5500	49.3750	151.0000	103.0481	69.3510
Nov. „ ...	24.3125	2.5500	49.3750	151.0000	103.2935	69.1875
Dec. „ ...	24.3125	2.5500	49.3750	151.0000	103.5442	68.9330
Jan. 1901 ...	24.3125	2.5450	49.3750	151.0000	97.4890	70.2500
Feb. „ ...	24.3125	2·5480	49.3750	151.0000	100.4240	72.8804
Mar. „ ...	24.2550	2.5454	49.3100	151.0000	100.8700	72.8900
Apr. „ ...	24.2500	2.5450	49.2500	151.0000	101.5000	73.1667
May „ ...	24.2500	2.5450	49.2500	151.0000	102.0926	73.6944
June „ ...	24.3250	2.5510	46.4000	151.0000	102.6900	74.4400
July „ ...	24.4861	2.5685	49.6250	151.7220	104.9352	76.7963
Aug. „ ...	25.5000	2.5700	49.7407	152.0000	105.2870	77.0555
Sept. „ ...	24.5000	2.5700	49.7083	152.0000	104.8229	76.5937
Oct. „ ...	24.3726	2.5542	49.3605	151.3460	104.8266	76.9135
Nov. „ ...	24.3125	2.5468	49.3400	151.0000	106.2188	78.1771
Dec. „ ...	24.3125	2.5500	49.5000	151.0000	107.5385	79.6915
Jan. 1902 ...	24.3130	2.5500	45.5000	151.0000	—	—
Feb. „ ...	24.4400	2.5590	49.6630	151.0870	—	—
Mar. „ ...	24.4850	2.5640	49.7200	151.5000	—	—
Apr. „ ...	24.4350	2.5596	49.6200	151.7800	—	—

Note :—The foregoing table is based on the report of the Yokohama Specie Bank. As the bills on Shanghai payable on sight for the month of April could not be quoted, the quotation of bills payable after ten days was used instead.

PART VI.

ARMY AND THE NAVY.

(THE RED CROSS SOCIETY OF JAPAN.)

CHAPTER I.—Army.

Introductory—Distributions of the Standing Army—The Personnel on Peace Standing—Factories—Appointments of Officers—The Complement of Non-Commissioned Officers—Recruiting of Privates—Education—Punishment and Goals—Medical Affairs.

I. INTRODUCTORY.

GENERAL REMARKS.—In ancient times when the civil and military affairs were one and indivisible, all the adults in the realm were obliged to offer their services in the army with the emperor of the day as the commander-in-chief as already described under Section I.

After the real power of the country had passed into the hands of military clans, first the Heike, then the Genji, after which came the Hōjō, the Ashikaga, and so on till this military usurpation terminated with the Tokugawa,—that is, it was after feudalism had been ushered in, that a class of professional soldiers made their appearance. Both the leaders and their retainers trained their sons in their own profession which therefore became a hereditary one.

Hereditary Fighters.

This system of hereditary soldiery ceased to exist with reinstatement of the Imperial régime in the Restoration, and the vacancy thus created in the military ranks was filled with the adults of the country of all classes, and at last the system of hereditary soldiers was superseded by that of conscription. The successful consummation of this grand work of social revolution without any heavy price being paid in bloodshed or in the other national disasters usually incidental to such mighty changes, reflects great credit on the solidarity of our national system and on the tremendous influence enjoyed by the Imperial court.

Conscription System.

In the very beginning of the new era, one of the seven departments of state, as administrative affairs were subdivided at that time, took charge of military and naval affairs. It was in 1871 that the organization of the Department was subjected to thorough readjustment, and that a line of remarkation began to be drawn up between the land and sea services, till coming to the following year the separation of the two main services was completed and the War and the Naval Departments were made independent offices.

Separation of the Two Services.

II. ORGANIZATION OF THE STANDING ARMY.

The Organization of the Standing Army is as follows:—

ORGANIZATION OF THE STANDING ARMY.

Location of Divisional Head-Quarters.	Infantry. Brigade.	Infantry. Regiment.	Cavalry. Brigade.	Cavalry. Regiment.	Field Artillery. Brigade.	Field Artillery. Regiment.	Engineer'g Battalion.	Commissariat Battalion.	Locality of Garrison of Various Corps.
Imperial Body Guard.									
Tokyo.	No. 1	No. 1	—	—	No. 1	No. 13	Imperial	Bodyg'rd	Tokyo.
		„ 2				„ 14	Imperial	Bodyg'rd	
						„ 16	corps.	corps.	
		„ 3	No. 1	No. 13	—	—	—	—	Narashino.
		„ 4		„ 14					
1st Division.									
Tokyo.	„ 1	„ 1	—	—	—	—	—	—	Tokyo.
		„ 15		—	—	—	—	—	Takasaki.
	„ 2	„ 2	—	—	—	—	—	—	Sakura.
		„ 3	—	—	—	—	—	—	Tokyo.
	—	—	—	2 { „ 1	—	—	—	—	Tokyo.
			—	„ 15	—	—	—	—	Narashino.
			„	„ 10	—	—	—	—	Narashino.
2nd Division.									
Sendai.	„ 3	—	—	—	No. 2	No. 1	—	—	Konodai.
	„ 10					„ 16	—	—	„
						„ 17	—	—	„
						„ 18	—	—	Shimo-shizu.
3rd Division.									
Nagoya.	„ 5	No. 6	—	„ 3	—	„ 3	No. 3	No. 4	Nagoya.
	„ 17	„ 33							
		„ 18	—	—	—	—	—	—	Toyohashi.
		„ 34	—	—	—	—	—	—	Shizuoka.
4th Division.		„ 8							
Osaka.	„ 7	„ 37	—	„ 4	—	„ 4	—	„ 3	Osaka.
	„ 19	„ 38	—	—	—	—			
		„ 9	—	—	—	—	—	—	Otsu.
		„ 38	—	—	—	—	„ 4	—	Fushimi.
5th Division.									
Hiroshima.	„ 9	„ 11	—	„ 5	—	„ 5	„ 5	„ 5	Hiroshima.
	„ 21	„ 41	—	—	—	—	—	—	Hamada.
		„ 42	—	—	—	—	—	—	Yamaguchi.
6th Division.		„ 13							Kumamoto.
Kumamoto.	„ 11	„ 45	—	„ 6	—	„ 6	„ 6	„ 6	Kagoshima.
	„ 23	„ 23	—	—	—	—	—	—	Kumamoto.
		„ 46	—	—	—	—	—	—	Omura.
7th Division.		„ 25							
Asahigawa.	„ 13	„ 26	—	—	—	—	—	—	Sapporo.
	„ 14	„ 27							
		„ 28	—	„ 7	—	„ 7	„ 7	„ 7	Asahigawa.
8th Division.		„ 5							Aomori.
Hirosaki.	„ 4	„ 31	—	„ 8	—	„ 8	„ 8	„ 8	Hirosaki.
	„ 16	„ 17	—	—	—	—	—	—	Akita.
		„ 12	—	—	—	—	—	—	Yamagata.
9th Division.		„ 9							
Kanazawa.	„ 6	„ 35	—	„ 9	—	„ 9	„ 9	„ 9	Kanazawa.
	„ 18	„ 19	—	—	—	—	—	—	Tsuruga.
		„ 36	—	—	—	—	—	—	Sabae.
10th Division.		„ 10							Himeji.
Himeji.	„ 8	„ 40	—	„ 10	—	„ 10	—	„ 10	Tottori.
	„ 20	„ 20	—	—	—	—			
		„ 39	—	—	—	—	„ 10	—	Fukuchi-yama.
11th Division.		„ 22							
Marugame.	„ 10	„ 44	—	—	—	—	—	—	Himeji.
		„ 12	—	—	—	—	—	—	Matsuyama.
	„ 22	„ 43	—	„ 11	—	„ 11	„ 11	„ 11	Kochi. Marugame.
12th Division.		„ 14							
Kokura.	„ 12	„ 47	—	„ 12	—	„ 12	„ 12	„ 12	Kokura.
	„ 24	„ 24	—	—	—	—	—	—	Fukuoka.
		„ 48	—	—	—	—	—	—	Kurume.

Note:—Besides those mentioned in the above table there are artillery corps in all the forts, garrisons in Tsushima and Formosa, and Railway corps in Tokyo.

III. PERSONNEL ON PEACE STANDING.

According to the inquiries carried out at the end of the year 1901 the strength of commanding staff on peace standing is as follows:—

Kind of Service.	Active Service.	1st Reserve.	Land-Wehr.	Total.
General and Non-Combatant of Equivalent Rank	110	27	10	147
Gendarmes	91	54	27	127
Infantry	4,427	1,654	873	6,954
Cavalry	421	95	28	544
Artillery	1,519	239	98	1,856
Engineering	474	98	42	614
Commissariat	252	73	34	359
Paymaster	712	307	168	1,187
Surgeon	932	526	128	1,586
Veterinary Surgeon	148	45	27	220
Band	7	—	—	7
Total	9,093	3,118	1,435	13 646
1900	8,608	2,400	1,165	12,173
1899	7,994	1,931	994	10,916
1898	7,400	1,496	865	9,761
1897	6,632	1,340	776	8,784
1896	5,785	1,345	528	7,658

IV. FACTORIES.

Arsenals.—Subjoined to the Military Arms and Ammunition Office, the Arsenals manufacture and repair all sorts of arms required in the Army and also ammunition for the fleets. The Arsenals are situated in Tokyo and Ōsaka, the former undertaking to manufacture small arms, cartridges, and the implements and tools pertaining to small arms. It maintains at Meguro, Itabashi and Iwahana the powder factories. The Ōsaka Arsenal undertakes the manufacture of guns, cannon-balls, and other objects of a like nature, and maintains the powder factory at Uji and the arm workshop at Moji.

In 1901 the operatives employed at the Tokyo Arsenal numbered 2,064,480 men and 96,325 women, in all 2,160,805 calculated

according to the number of days the operatives attended work Computed in the same number, the Ōsaka Arsenal employed in the same year 1,461,916 men and 37,641 women, in all 1,499,557.

Senju Woolen Factory.—This factory undertakes the weaving of woolen goods. In 1901 it employed 144,381 men and 173,745 women, in all 318,126 computed according to the numbers of days each operative attended work.

Administration of Horse Affairs.—The administration of affairs connected with military horses may be divided into three stages from the commencement of the era. In the first period, that is from 1868 to 1872, the supply of chargers was obtained by purchase from the stock-farmers and distributed at once among the troops. In the second period, that is from 1873 to 1874 year, the horses purchased from the stock-farmers were first trained before being distributed. In the third period, that is 1881 and on, colts were purchased, and were distributed after they had been fed by the army veterinarians. In order to facilitate the business of making this purchase the Horse Supply Office has been established, with has its headquarters in Tokyo and seven branches in the provinces. At the branches, cultivated fields, pastures, and grass-land are provided, these measuring in all 10,502 *cho*.

V. APPOINTMENTS OF THE OFFICERS.

In the beginning of the military system early in the present era the complement of officers and non-combatants of equivalent rank was made up of those who had held a cerresponding post in the service of the previously existing feudal governments, and also with those qualified for the posts and selected from among the candidates in general.

Officers of Various Corps.—The officers of infantry, cavalry and commissariat services are appointed from among the following who have undergone the following routine of study either in the troops or at the Shikan Gakko (Officers' School):

a. Those who have graduated from the central military preparatory school.

b. Those who have graduated from the Government or public ordinary middle schools or schools recognized by the Education Minister as institutions of equal standing or those who possess scholarship equal to that of those graduates and who have passed with success the entrance examination.

PAYMASTERS.—The paymasters are appointed from among those Lieutenants or Sub-Lieutenants on active service at the various corps who, having been admitted through entrance examination to the Paymaster School, have gone through the regular course there, or those who come under any of the following heads and have gone through the required training at the Paymaster School.

a. Those students of the Colleges of Law of the Imperial Universities or of the Higher Commercial Schools who on application have been elected as paymaster candidates and who as such have gone through the respective courses at those institutions.

b. The graduates of the foregoing institutions or of the graduates of foreign institutions of equal standing who have applied for the paymastership.

SURGEONS.—The complement of army surgeons is filled with those coming under the following headings who have acquired the required knowledge at the infantry corps or at military hospitals:—

a. The students of the Colleges of Medicine of the Imperial Universities or of a special school for medicine or of a local medical school regarded as of equal standing by the Minister of Education as the ordinary middle schools, and who have applied for admission to the service and who have grduated from the respective institutions.

b. The graduates of the above-mentioned institutions (or the graduates of foreign institutions possessing equal schoolarship) who have applied for admission to the service.

c. The graduates of the Army Surgeons School.

d. The one-year volunteers possessing either the license of medicine or of pharmacy who have applied for admission to the service.

MILITARY VETERINARY SURGEONS.—The staff of Military Veterinary Surgeons is supplemented with those coming under the fol-

lowing heads, and who have acquired the required knowledge at the Remounting Corps.

a. The students of the course of Veterinary Surgery of the Colleges of Agriculture of the Imperial Universities or of the Practical Veterinary Course at the said Colleges who have gone through the prescribed course at such a college.

b. The graduates of the above-mentioned institution (or of foreign schools regarded as of equal standing) who have applied for admission to the service.

c. The one-year volunteers possessing the license of veterinarians who apply for admission to the service.

Band-Masters.—The band-masters are appointed from among the assistant band-masters who have served with distinction for at least three years on active service.

VI. THE COMPLEMENT OF NON-COMMISSIONED OFFICERS.

The complement of non-commissioned officers is supplemented of as follows:—

Gendarmes.—The non-commissiond officers are recruited from among the lance-corporals of the corps who have been with the colors for not less than two years or from among the non-commission officers of the infantry, cavalry, artillery, engineering and commissariat corps who have been with the colors for not less than six years and who have passed the recruiting examination.

Non-Commissioned Officers of Various Corps.—Of the non-commissioned officers in these corps, those belonging to the longer term service are appointed from among those who are not on the active or reserve service of the army or the navy and who have passed the admission examination; or from among the privates who have applied for admission to the services and who have received a suitable education. The non-Commissioned officers of shorter-term service are appointed from among the lance-corporals who have been with the colors for at least two years from the date of enrolment and who are qualified to undertake the service.

FOREMEN OF GUNNERY WORKSHOPS.—The foremen of gunnery workshops are appointed from among those not on active service or on either the reserves of the army or the navy who have graduated from the Gunnery Artisan School or from among the privates of various corps who, having been selected on examination in the first year of their service, have also graduated from the same institution.

FOREMEN OF FARRIERY.—The foremen of farriery are appointed from among those not on the active or reserve force of the army or the navy and who have graduated from the farriery course at the Veterinary Surgery School, or from among the farriers of the cavalry, artillery or commissariat corps who on applying for admission to the service have been judged to possess qualification equal to non-commisioned officers and who have passed the required course of study at the Veterinary Surgery School.

FOREMEN OF TAILOR AND SHOE-WORKSHOPS.—The foremen of tailor and shoe-workshops are appointed from among tailor-privates and shoemaker-privates attached to the different corps.

MEDICAL ASSISTANTS.—Medical assistants are recruited from among male nurses not on the active or reserve service of the army or the navy who, having been selected on examination, have received the necessary education.

PAYMASTER-CLERKS.—Paymaster-clerks are appointed from among the non-commissioned officers of the various corps who have served with the colors for at least three years and who have received the necessary education at the Paymasters School.

BAND-SERGEANTS.—Band sergeants are appointed from among the bands-men who have been on active service for not less than two years and who are judged to possess qualifications equal to those of non-commissioned officers.

VII. RECRUITING OF PRIVATES.

The privates were at first recruited from the various feudal governments, the number determined according to the amount of

their fief. This system prevailed till 1873. Early that year the conscription system was first instituted, and males who have reached the age of twenty men were all included in the army list. Thus the system of recruiting was completely changed. Since that time the system has undergone frequent modifications, till it has assumed its existing form. To briefly enumerate the fundamental points in the existing system, first.

Conscription Service.

All the Japanese male subjects from full seventeen years old to full forty are liable to military service.

Classification of the Service.

The service is divided into active service, *landwehr* service, depôt service, and landsturm service.

The active service is divided into service with the colors and with the first reserve, the former to extend over three years and to be obligatory on all who have attained the age of full twenty years. Service with the first reserve is obligatory on all who have finished the service with the colors and lasts four years and four months.

The landwehr reserve lasts five years and is organized of those who finished the first reserve service.

The depôt service is divided into the first depôt service and the second depôt service, the former to last seven years and four months and the late one year and four months. The first depôt service is organized with those who have not been enlisted for active service while the second depôt service is organized with those who have not been enlisted for the first depôt service.

The landsturm service is divided into the first and second divisions, the former to be organized with those who have completed the term of the landwehr service and the first depôt service and the second division includes all those who are not on the other services.

Number Eligible for Conscription.

In 1901 all the males liable to conscription service numbered 539,282 throughout the country. They were distributed as follows as the result of conscription service examination :—

Distribution.	Number.	Percentage.
Levied for Service (Active and 1st and 2nd Depôt Service).	187,907	34.84
Levy Postponed	108,016	20.03
Levy Exempted	194,003	35.98
Service Exempted	34,278	6.36
Others	15,076	2.79
Total	539,282	100.00

VIII. EDUCATION.

The Staff College.—This institution enables young officers of distinguished ability to study the higher branches of military science and also to acquire those knowledge necessary for all who wish to conduct investigations pertaining to military affairs.

The Artillery and Engineering School.—Sub-Lieutenants of artillery and engineering corps are taught here all the science required for discharging the duties of officers in the artillery and engineering corps.

The Officers' School.—This school is composed of cadets of various corps who receive the education necessary to subordinate officers. The term of study is one year, and every year about 450 cadets are admitted.

The Military Training School (Toyama Gakko).—This school is principally devoted giving to students sent from the infantry corps training in tactics, shooting exercises, fencing and gymnastics, with the object of promoting their efficiency in the service. The term of study is from two or seven months and the number of students to be admitted determined every year.

The Central Military Preparatory School.—This school is attended by the graduates of Local Military Preparatory Schools with which it is regulary connected, and gives to the students a general education and also the preliminary military education necessary for military cadets. It is devoted to training cadets of various crops. The term lasts two years and every year about three hundred students are admitted.

The Local Military Preparatory Schools.—These schools give a general education and military training to those boys who aspire to become officers. The schools are connected with the Central Military Preparatory School. There are six schools of this description, these being located at Tokyo, Sendai, Ōsaka, Nagoya, Hiroshima, and Kumamoto. Each admits about 50 students every year. The term extends for three years.

The Military Riding School.—The school collects from the different cavalry corps students who wish to receive a training in tactics and riding. The term extends for about eleven months and the number of students to be admitted is fixed beforehand every year.

The Military Field Artillery Shooting School.—This collects students from the Field Artillery corps to give training on tactics and shooting exercises in field artillery. The term lasts two or three months and the number of students to be admitted is determined every year.

The Military Forts Artillery Shooting School.—This school collects students from the Fort Artillery corps to give them a training in the subjects of fortification, tactics and shooting. The term extends for two or three months and the number of students to be admitted is determined every year.

The Military Paymaster School.—This school trains those desirous to become military paymasters, the candidates to be admitted being the applicants from among Lieutenants and Sub-Lieutenants admitted on examination, and also applicants from among the graduates of the Colleges of Law of the Imperial Universitis and of the Higher Commercial School. There are two courses, one of two years and the other of six months. The number of students to be admitted is determined every year.

The Army Surgery School.—The students of this school consist of the surgeons of the Army Medical corps and also of the licensed medical practitioners and pharmatists who wish to become army surgeons on active service. The first class students are taught for four months and the second class for one year. The number to be admitted is determined every year.

The Military Veterinary Surgery School.—The students

of this school consist of veterinary surgeons of the Military Veterinary Surgeons corps who receive training in this particular branch of science; also the farriery-foremen of the various corps are trained in the science of farriery. The course of study extends for from three to nine months, and the number of students to be admitted is determined every year.

The Military Gunnery and Mechanics Work School.—The school trains those who wish to become foremen-smiths, foremen-saddlers, foremen-gunsmiths, foremen of wood mechanics, and foremen of casting work. The course of study extends for one to two years, and the number to be admitted is fixed every year.

The Military Band School.—The school gives training to those desirous to become band-men. The course of study is about one year and the number to be admitted is determined every year.

IX. PUNISHMENT AND GAOLS.

The Court-Martial—In 1872 the Court-Martial was established, and the Garrison Central and Branch Detention House Regulations were also enacted, and all matters relating to military justice and criminal procedure were first brought under a regular system. In 1883 the Military Criminal Procedure was elaborated; it was amended in 1888, and it remains to-day in this amended form

The Court-Martial deals all criminal offences committed by combatants and non-combatants, and it enforces the Military Criminal Code and the ordinary criminal provisions.

The Court-Martial is divided into the Higher Court and the Divisional Court. The latter is established in each Military Division and deals with criminal matters that have happened within its jurisdiction. The Higher Court is established at Tokyo and deals with Criminal matters relating to officers of the rank of Generals; it also deals with the cases of appeals made against the judgment of a Divisional Court-Martial.

The Military Justice comprises the officers of *Kensatsu-kan* (Prosecutors), *Riji* (Preliminary Judges), *Rokuji* (Clerks), *Hanshi-*

cho (Chief Judge) and *Hanshi* (Collegiate Judges). They are presided, in the case of a Divisional Court, by the Commander of the Division, and, in the case of the Higher Court, by the Minister of War. The *Kansatsu-kan* takes charge of matters relating to prosecution of crimes; the *Riji* of the examination of cases, corresponding to preliminary examination of the ordinary court; and the *Rokuji* corresponds in function to clerks of the ordinary court. They are all civil officials. The *Hanshi-cho* and *Hanshi* are military officers and five of them are to sit over a case. The *Riji* takes part in judgment, though he does not enjoy the voting right. The Court-Martial is composed of the *Hanshi-cho*, the *Hanshi*, and the *Riji*, the *Rokuji* and the *Kensatsukan* being outside the limit. A judgment acquires validity on the approval of the Emperor or of the supervising chief, according to the official rank of the defendant or the relative gravity of the office. Then it is declared and carried into effect.

Military gaols.—In 1876 Rules relating to the Qualification of Military Gaolers were first provided. The Military Gaols, otherwise called Garrison Gaols, are located at places possessing garrison and Divisional Court-Martials. The Garrison Commanders are made to control the gaols. These gaols confine combatants or non-combatants who have been convicted either by the Military or ordinary laws of an offence not graver than misdemeanor and who are still connected with their respective services.

X. MEDICAL AFFAIRS.

The establishment in 1868 of the Temporary Military Hospital in Tokyo was the origin of this institution in Japan. The system has undergone changes several times, and it now exists in the form of the Garrison Hospital Regulations enacted in February of 1898. A military hospital is located, according to the provisions of the regulations, at each place possessing a military garrison. It takes care of all cases requiring medical treatment that appear among the troops, takes charge of the keeping and supply of medical stuff and instruments, and also undertakes the education of surgeon-privates

and surgeon-non-commissioned officers. All the expenses relating to the medical treatment of those receiving treatment at the hospital are borne by the Government, except for those who occupy the rank of special sergeants or above and for the one-year volunteers.

CHAPTER II.—The Navy.

Personnel on Peace Standing—Naval Works—Complement of the Personnel—The List of the Imperial Fleet—Education—Punishment—Health and Hygiene—Hydrography and Chart.

I. INTRODUCTORY.

General Remarks.—Though nothing definite is known about the maritime affairs in ancient times, this much can be stated with certainty that the art of navigation seems to have been tolerably well developed in Japan about 26 or 27 centuries ago, that is to say about six or seven centuries before the Christian era, for history records of the existence of intercourse as that remote period between this country and Korea. Coming down to the period corresponding to the 15th or 16th centuries after Christ something like a regular navigation service connected Japan with the neighboring countries, especially Korea and China. Soon the scope of the maritime enterprises was expanded and our ships began to cross over to the South Seas, Siam, India, and even to the American continent. There is reason to believe that these ocean-going ships must have numbered about two hundred at that time. It was an irreparable loss to the country that this enterprise was sternly suppressed by the Tokugawa Shogunate about the middle part of the 17th century of the Christian era, and that it should, from religious prejudice, enforce the exclusion policy, for the Shogunate prohibited on pain of severe penalty the building of big ships, and the maritime trade that was going to flourish was thus throstled to death.

The naval warfare forms a comparatively unimportant chapter so far as the ancient history of Japan is concerned. To enumerate those that are worthy of mentioning, in the first place we have the expedition

of Korea by the Empress Jingo in the 2nd century A.D. About ten centuries after, the naval battle at Dannoura between the Genji and Heike clans may be noted. The invasion of Kyūshu by Kublai Kahn's armada in the next century is perhaps the most memorable event of foreign invasion that ever occurred in Japan within the period of authentic history. The annihilation of that armada was even more complete than the equally memorable destruction by England of the Spanish Armada. Towards the close of the same century Japan took the offensive against China, and several encounters occurred between Hideyoshi's fleet with that of Korea off the coast of that Peninsula. It ought to be remembered, however, that the warships of those days were not properly warships as the term is now understood, for they were merely armed merchant-men and even fishing junks. There was no fleet properly so called in time of peace.

It was only recently that Japan obtained warships built in modern style. The warships of this type that the Tokugawa Regency purchased from abroad towards its later days numbered over ten, while more or less warships were also purchased by the feudal lords of the clans of Satsuma and Tosa. All those were the first warships that Japan ever had. However there was no central naval office at that time, and the art of navigation and naval science was in a primitive state.

As already mentioned in the preceding chapter, it was in 1872 that Army and the Navy were separated and the latter was elevated to the dignity of an independent Department of the State. In the same year the Naval Academy, Magazine, Hospital, and Court-Martial were established; Yokosuka Dockyard and workshop were transferred to the control of the Naval Department. The Naval Magazine was the forerunner of the Naval Arsenal. In 1873 the Temporary Admiralty was created, and this was the origin of the present admiralty system. In 1896 that office was replaced by Tokai Admiralty established at Yokohama. Two years after the Central Staff Board was created, and was made to attend to matters relating to national defence and the efficiency of the service, both land and sea forces. At the same time a naval engineering school was established subjoined to the Naval Academy, to be separated into an independent institution three years later. In 1884 the

Tokai Admiralty was removed to Yokosuka and received the new name of Yokosuka Admiralty. Two years later it was ordained to establish an admiralty at Kure, Sasebo, Maizuru and Muroran. The Naval Section was established in the Central Staff Board, and coming to 1888 the Naval staff was separated and was elevated to the dignity of an independent office under the style of the Naval Staff Board. In the same year the Naval College was started. Next year the two Admiralties at Kure and Sasebo were opened. In 1900 the Naval Comptroller Board, the Tokyo Naval Arsenal, the Shimose Powder Factory, and the Naval Coal Reserve were established. Also an edueation board was created to control all the educational institutions in the Navy. In 1901 the Maizuru Admiralty was opened.

II. PERSONNEL ON PEACE STANDING.

At the end of 1901 the strength of Commanding staff on peace standing was as follows:—

THE PERSONNEL.

Kind of Service.	Active Service.	1st Reserve.	2nd Reserve.	Total
Admiral and Non-Combatant of Equivalent Rank	47	22	14	83
Senior Officer	639	22	60	721
Junior Officer	1,060	23	70	1,153
Cadet	330	—	—	330
Special Warrant Officer	631	10	54	695
Warrant Officer	5,802	163	—	5,965
Seaman	22,036	4,036	1,793	27,865
Student	834	—	—	834
Total	31,379	4,276	1,991	37,646

III. NAVAL WORKS.

At the end of 1901 the data relating to the Naval works were as follows:—

NAVAL WORKS.

Works.	No. of Engines.	H.P.	No. of Operatives Computed by the Number of Attendance.	Aggregate Wages of Operatives. *yen.*
Yokosuka Dockyard...	28	564	1,513,691.87	780,048
Kure „	17	510	1,390,054.00	731,531
Sasebo „	9	816	945,317.68	483,254
Maizuru „	—	—	1,651.50	1,042
Yokosuka Arsenal	2	50	307,973.15	153,119
Kure „	41	2,797	2,035,548.46	1,040,699
Sasebo „	2	40	174,371.69	88,050
Maizuru „	—	—	401.40	319
Tokyo „	9	239	462,587.73	227,088
Shimose Powder Factory... ...	1	62	61,222.83	23,565
Total	109	5,078	6,892,820.31	3,528,718

Note:—The Maizuru Dockyard and Arsenal were opened on October 1st of 1901.

IV. COMPLEMENT OF THE PERSONNEL.

The Higher Service.—Concerning the method of complementing the personnel of the higher service no authentic record relating to the initial stage of the navy remains. It was very likely, however, that those officers who were employed on board the warships belonging to the Shogunate or the feudal princes got commission for the Navy of the Imperial Government. Also, the commission was given to the few who had studied the naval science in foreign countries and sometimes the graduates of the Naval Academy, as is the case at present. According to the Naval Appointment Regulations now in force, the Naval Engineers are filled with the graduates of the Naval Engineering School, while Surgeons, Paymasters, Constructors, Pharmatists, etc. are filled with the graduates of the Naval Institutions for the respective services, also the graduates of the Colleges of the Imperial Universities or of the institutions of equal standing.

Complement of the Staff of Warrant Officers and Seamen.—In the year 1872 Rules relating to the Levy of Seamen were promulgated, and they inaugurated the system of conscription service for the fleet. The conscription service system is supplemented by the Voluntary Service System promulgated in 1899. The Conscription Rules were put in force for the first times in 1885. At present the levying is carried on both by the conscription and voluntary service systems Chief Warrant Officers are filled with Warrant Officers of merit and the latter with seamen of merit.

V. THE LIST OF

Name.	Class.	Where Built.	Date of Launch.
Asahi.	1st Class Battleship.	Great Britain.	1899.
Mikasa.	,,	,,	1900.
Hatsuse.	,,	,,	1899.
Shikishima.	,,	,,	1898.
Fuji.	,,	,,	1896.
Yashima.	,,	,,	,,
Izumo.	1st Class Armored Cruiser.	,,	1899.
Iwate.	,,	,,	1900.
Asama.	,,	,,	1898.
Tokiwa.	,,	,,	,,
Yakumo.	,,	Germany.	1899.
Azuma.	,,	France.	,,
Nisshin (Riverdaira)	,,	Italy.	1904.
Kasuga (Moreno)	,,	,,	,,
Chinyen.	2nd Class Battleship.	Germany.	1882.
Kasagi.	2nd Class Cruiser.	United States of America.	1898.
Chitose..	,,	,,	,,
Itsukushima.	,,	France.	1889.
Matsushima.	,,	,,	1891.
Hashidate.	,,	Yokosuka.	,,
Takasago.	,,	Great Britain.	1897.
Yoshino.	,,	,,	1892.
Toyohashi.	Torpedo Tender.	,,	1888.
Fusō.	2nd Class Battleship.	,,	1877.
Naniwa.	2nd Class Cruiser.	,,	1885.
Takachiho.	,,	,,	,,
Akitsushima.	3rd Class Cruiser.	Yokosuka.	1892.
Izumi.	,,	Great Britain.	1883.
Akashi.	,,	Yokosuka.	1897.
Suma.	,,	,,	1895.
Saiyen.	3rd Class Coast Defence.	Germany.	1887.
Chiyoda.	3rd Class Cruiser.	Great Britain.	1890.
Kongo.	3rd Class Coast Defence.	,,	1877.
Hiyei.	,,	,,	,,
Heiyen.	1st Class Gun-Boat.	China.	1887.
Tsukuba.	3rd Class Coast Defence.	East India.	Unknown.
Miyako.	Dispatch-Boat.	Kure.	1897.
Takao.	3rd Class Coast Defence.	Yokosuka.	1887.
Yaeyama.	Dispatch-Boat.	,,	1889.

THE IMPERIAL FLEET.

Material of Hull.	Displacement.	Indicated Horse Power.	Speed.	Armaments.		
				Ordinary Guns.	Quick-Firers.	Torpedo-Tubes.
Steel.	15,443	15,207	18	4	46	4
„	15,362	15,207	18	4	46	4
„	15,342	14,700	18	4	46	4
„	15,088	14,700	18	4	46	5
„	12,649	13,687	18	4	34	5
„	12,517	13,687	18	4	34	5
„	9,906	14,700	21	—	38	4
„	9,906	14,700	21	—	38	4
„	9,855	18,248	22	—	38	5
„	9,855	18,248	22	—	38	5
„	9,800	15,500	20	—	36	5
„	9,456	16,600	20	—	36	5
„	7,700	13,500	20	4	24	4
„	7,700	13,500	20	4	24	4
„	7,335	6,000	15	4	14	3
„	4,978	17,235	23	—	30	4
„	4,836	15,714	23	—	30	4
„	4,278	5,400	16	1	30	4
„	4,278	5,400	16	1	27	4
„	4,278	5,400	16	1	29	4
„	4,227	15,967	23	—	30	5
„	4,225	15,967	23	—	36	5
„	4,120	1,870	13	—	5	—
Iron.	3,777	3,650	13	4	16	3
Steel.	3,709	7,604	18	—	20	4
„	3,709	7,604	18	—	20	4
„	3,172	,516	19	—	20	4
„	2,967	5,576	17	2	14	—
„	2,800	8,000	20	—	20	2
„	2,700	8,500	20	—	20	2
„	2,481	2,839	15	4	6	4
„	2,439	5,678	19	—	25	3
„	2,284	2,535	13	8	2	2
„	2,284	2,535	13	8	2	2
Steel.	2,185	1,200	11	1	7	—
Wooden.	1,978	526	8	7	—	—
Steel.	1,800	6,130	20	—	12	2
	1,778	2,332	15	5	2	2
Steel.	1,609	5,400	20	—	11	2

Name.	Class.	Where Built.	Date of Launch.
Tenriu.	3rd Class Coast Defence.	Yokosuka.	1883.
Katsuragi.	,,	,,	1885.
Yamato.	,,	Onohama.	,,
Musashi.	,,	Yokosuka.	1886.
Tsukushi.	1st Class Gun-Boat.	Great Britain.	Unknown.
Kaimon.	3rd Class Coast Defence.	Yokosuka.	1883.
Chihaya.	Dispatch-Boat.	,,	1900.
Amagi.	2nd Class Gun-Boat.	,,	1877.
Tátsuta.	Dispatch-Boat.	Great Britain.	1894.
Iwaki.	2nd Class Gun-Boat.	Yokosuka.	1878.
Ōshima.	,,	Onohama.	1891.
Maya.	,,	,,	1886.
Atago.	,,	Yokosuka.	1887.
Chokai.	,,	Ishikawajima.	,,
Akagi.	,,	Onohama.	1888.
Sōkō.	,,	China.	1869.
Chintō.	,,	Great Britain.	1881.
Chinsai.	,,	,,	,,
Chinnan.	,,	,,	,,
Chinhoku.	,,	,,	,,
Chinchu.	,,	,,	,,
Chinpen.	,,	,,	,,
Shirakumo.	Torpedo Destroyer.	,,	1901.
Akatsuki.	,,	,,	,,
Ikazuchi.	,,	,,	1898.
Inazuma.	,,	,,	1899.
Akebono.	,,	,,	,,
Sasanami.	,,	,,	,,
Oboro.	,,	,,	,,
Murakumo.	,,	,,	1898.
Shinonome.	,,	,,	,,
Yūgiri.	,,	,,	1899.
Shiranui.	,,	,,	,,
Kagerō.	,,	,,	,,
Usukumo.	,,	,,	1900.

Grand Total 74 vessels

Material of Hull.	Displacement.	Indicated Horse Power.	Speed.	Armaments. Ordinary Guns.	Quick-Firers.	Torpedo-Tubes.
Wooden.	1,547	1,267	12	7	—	—
	1,502	1,622	13	7	4	—
	1,502	1,622	13	8	—	—
	1,502	1,622	13	8	—	—
Steel.	1,372	2,433	16	7	2	—
Wooden.	1,367	1,267	12	8	—	—
Steel.	1,250	6,000	21	—	6	5
Wooden.	926	726	11	6	4	—
Steel.	864	5,069	21	—	6	5
Wooden.	667	659	10	3	—	—
Steel.	640	1,217	13	4	5	—
Iron.	622	963	10	2	2	—
	922	963	10	2	—	—
Iron.	622	963	10	2	—	—
Steel.	622	963	10	4	6	—
Wooden.	610	117	9	2	1	—
Steel.	447	420	10	3	—	—
,,	447	420	10	—	2	—
,,	447	420	10	—	2	—
,,	447	420	10	3	—	—
,,	447	420	10	3	—	—
,,	447	420	10	3	—	—
,,	373	7,000	31	—	6	2
,,	355	6,000	31	—	6	2
,,	311	6,200	31	—	6	2
,,	311	6,200	31	—	6	2
,,	311	6,200	31	—	6	2
,,	311	6,200	31	—	6	2
,,	311	6,200	31	—	6	2
,,	279	5,475	30	—	6	2
,,	279	5,475	30	—	6	2
,,	279	5,475	30	—	6	2
,,	279	5,475	30	—	6	2
,,	279	5,475	30	—	6	2
,,	279	5,475	30	—	6	2
...	267,580	486,588	—	160	1,072	168

TORPEDO-BOATS ATTACHED TO YOKOSUKA NAVAL STATION.

Number.	Class.	Material of Hull.	Length. (*Metres*).	Displacement.	Horse Power.	Speed.	Armaments Quick Firers.	Torpedo Tubes.
No. 5	3rd Class.	Steel.	35.000	54	525	20	1	2
No. 6	„	„	35.000	54	525	20	1	2
No. 14	„	„	35.000	54	525	20	1	2
No. 15	„	„	34.000	53	657	20	*1	2
No. 18	„	„	35.000	54	525	20	1	2
No. 20	„	„	34.000	53	657	20	*1	2
No. 29	„	„	37.000	88	2,000	26	1	3
No. 30	„	„	37.000	88	2,000	26	1	3
No. 37	„	„	39.000	83	1,200	24	1	3
No. 38	„	„	39.000	83	1,200	24	1	3
No. 45	„	„	39.000	83	1,200	24	1	3
No. 46	„	„	39.000	83	1,200	24	1	3
Total... ...	—	—	—	830	12,214	—	12	30

TORPEDO-BOATS ATTACHED TO KURE NAVAL STATION.

No. 12	3rd Class.	Steel.	35.000	54	525	20	1	2
No. 13	„	„	35.000	54	525	20	1	2
No. 17	„	„	35.000	54	525	20	1	2
No. 19	„	„	35.000	54	525	20	1	2
No. 26	„	„	33.720	66	338	14	1	3
No. 27	„	„	33.630	74	443	16	2	3
No. 55	„	„	34.000	54	660	20	1	2
No. 57	„	„	34.000	54	660	20	1	2
Total... ...	—	—	—	464	4,201	—	9	18

TORPEDO-BOATS ATTACHED TO SASEBO NAVAL STATION.

Kotaka	1st Class.	Steel.	50.290	203	1,217	19	3	4
Hayabusa... ...	„	„	45.000	152	4,200	29	3	3
Manazuru... ...	„	„	45.000	152	4,200	29	3	3
Kasasagi	„	„	45.000	152	4,200	29	3	3
Chidori	„	„	45.000	152	4,200	29	3	3
Shirataka... ...	„	„	46.000	127	2,600	28	3	3
Fukuriu	„	„	42.750	115	1,016	20	2	4
No. 7	3rd Class.	„	35.000	54	525	20	1	2
No. 8	„	„	35.000	54	525	20	1	2
No. 10	„	„	35.000	54	525	20	1	2
No. 11	„	„	35.000	54	525	20	1	2
No. 21	2nd Class.	„	36.000	80	1,150	21	1	3

Number.	Class.	Material of Hull.	Length. (*Metres*).	Displacement.	Horse Power.	Speed.	Armaments Quick Firers.	Torpedo Tubes.
No. 24	2nd class.	Steel.	36.000	80	1,150	21	1	3
No. 25	„	„	39.000	85	990	23	2	3
No. 31	„	„	39.000	83	1,200	24	1	3
No. 32	„	„	39.000	83	1,200	24	1	3
No. 33	„	„	39.000	83	1,200	24	1	3
No. 34	„	„	39.000	83	1,200	24	1	3
No. 35	„	„	39.000	83	1,200	24	1	3
No. 36	„	„	39.000	83	1,200	24	1	3
No. 39	„	„	46.482	110	2,000	27	1	3
No. 40	„	„	46.482	110	2,000	27	1	3
No. 41	„	„	46.482	110	2,000	27	1	3
No. 42	„	„	46.482	110	2,000	27	1	3
No. 43	„	„	49.482	110	2,000	27	1	3
No. 50	3rd class.	„	34.000	53	657	20	1	2
No. 51	„	„	34.000	53	657	20	1	2
No. 52	„	„	34.000	53	657	20	1	2
No. 53	„	„	34.000	54	660	20	1	2
No. 54	„	„	34.000	54	660	20	1	2
Total... ...	—	—	—	2,883	48,039	—	45	85

TORPEDO BOATS ATTACHED TO MAIZURU NAVAL STATION.

No. 44	2nd class.	Steel.	39.000	83	1,200	24	1	3
No. 47	„	„	39.000	83	1,200	24	1	3
No. 48	„	„	39.000	83	1,200	24	1	3
No. 49	„	„	39.000	83	1,200	24	1	3
No. 60	„	„	39.000	83	1,200	24	1	3
No. 61	„	„	39.000	83	1,200	24	1	3
Total... ...	—	—	—	498	7,200	—	6	18
				—	—	—	—	—
Grand total ...	—	—	—	4,675	11,654	—	72	151

VI. EDUCATION.

THE NAVAL STAFF COLLEGE.—Founded in 1888 the college gives higher education to officers and engineers.

THE NAVAL ACADEMY.—Subordinate to the Board of Naval Education, the school educates those who aspire to become officers. It was founded in 1872 and was originally located in Tokyo. At present it is situated at Edajima, Hiroshima-ken.

THE NAVAL ENGINEERING SCHOOL.—Founded in 1878 as subordinate to the Naval Academy, it was converted into an independent institution three years later. The school instructs those who wish to become naval engineers.

THE NAVAL SURGERY SCHOOL.—The school gives higher course of science on naval surgeons and also teaches surgeon-cadets to qualify them for the service. It is controlled by the Director of Surgery Bureau of the Navy.

THE PAYMASTER TRAINING SCHOOL.—The school teaches the necessary knowledge to Paymaster cadets and also to the men in the service. It is controlled by the Paymaster Bureau.

THE NAVAL GUNNERY TRAINING SCHOOL, THE TORPEDO PRACTICE TRAINING SCHOOL, AND THE ENGINEERING PRACTICE TRAINING SCHOOL.—All those institutions give training to the men on the respective services.

VII. PUNISHMENT.

The first regular office to manage matters relating to admiralty punishment was established in 1872. With the elaboration of the Admiralty Code of Punishment, a Permanent Admiralty Court was established at Tokyo and at all the places possessing admiralties. The fleet holds a court of justice as circumstance requires.

VIII. HEALTH AND HYGIENE.

With the inauguration of the Naval Department in 1872 a Naval Hospital was founded in Tokyo. When in December of 1884

the Yokohama Admiralty was established, a Naval Hospital was also founded there, the Admiralty to control the Tokyo Naval Hospital. In November of 1888 that Hospital was abolished. At present each admiralty maintains its own hospital, so that we have a hospital at Yokosuka, Kure, Sasebo, and Maizuru.

IX. HISTORY OF HYDROGRAPHY AND CHART.

It was about the year 1872 that a reliable chart of the seas in the Far East was first drawn by Japan. We had another chart much earlier than that, for in the 12th year of Bunkwa (1815) and at the time of the Tokugawa Shogunate the celebrated hydrographer of the day, Chukei Ino, compiled one that was highly valuable. In 1862, the authorities of the time prepared, according to the method taught by the Dutchmen, a chart for part of the Sea of Ise. The sounding having been incomplete while the art of printing was imperfect, the chart did not much serve the purpose of any practical utility. The sailors of those days were therefore obliged to use the charts prepared by Dutchmen and English.

In 1871 the Hydrographical Bureau was created and the work of hydrography was commened in a regular manner. The task involved serious difficulty, owing to the fact that the business was quite novel to the country and could not, therefore, obtain specialists qualified for it. The late Rear-Admiral Yanagi who was ordered to take charge of the business experienced innumerable difficulties. He himself possessed the best knowledge on the subject at that time, having learned mathematics and surveying at Nagasaki from the Dutchmen. He, in conjunction with the commander of the British Surveying Ship "Sylvia," started the work of sounding the coast of the Inland Sea and of Hokkaido. (It may be remarked here that the Naval chart No. 991 published by the English Hydrographical Office was based on this combined sounding; in Japan it appeared in the shape of Naval chart No. 2). Next the chart of Kamaishi on the Pacific coast of Honshu was made, based on the result of sounding carried by Japanese experts alone. This was No. 1 chart of Japan and was adopted for use by our navigators. During

the 32 years that have elapsed since that time, the work was attended to with greater efficiency and diligence, and soon the agreement was concluded with many of the Western Powers for the exchange of our charts with those compiled by them. Our charts have been frequently exhibited in international exhibitions, as those held in Holland, France, America, etc. and have been received with appreciation. The charts thus for prepared number 278. At the same time the Hydrographical Registers were compiled, those relating to Hokkaido and the "Southern islands" published in 1873. The other records worth mentioning are the Hydrographical Registers round the coast of Japan (18 vols.), the Japan Hydrographical Work (5 vols.). the China Hydrographical Work (9 vols.), the Korean Hydrography, the Amur Coast Hydrography, the Fiji Archipelago Hydrography, the Pacific Navigation Route, and so forth.

The hydrographical business of Japan stands conspicuous as work completed by our countymen without the help of foreign specialists.

THE RED CROSS SOCIETY OF JAPAN.

The Red Cross Society of Japan owes its origin to the Southwestern Civil War that occurred in 1877. It was called at that time the Universal Benevolence Society (Haku-ai Sha) and was devoted to the work of tending wounded officers and men. This civil war that lasted from February to September of that year was the most disastrous and sanguinary internal trouble our country has experienced since the Restoration as it was the last that ever occurred. The sad spectacle of hundreds of wounded officers and men both of the Government and rebel troops dying or having to endure intense suffering owing to a lack of proper medical treatment appealed strongly to a number of men philanthropically disposed of the necessity of devising some measures for alleviating to some extent in the interest of humanity this misery of war. These organized, with the support of their friends, and on the model of similar benevolent institutions existing in the West a society to which they gave the above-mentioned name. The rules of the association were hurriedly

drawn up and on May 1st of that year application was forwarded to the Commander-in-chief's headquarters at Kumamoto for permission to dispatch a medical corps to the front to tend on the wounded men both on the side of the Government and on that of the rebels. Permission was granted and thus the benevolent work with which the Geneva Society is identified was, for the first time, carried out in Japan.

This philanthropic organization that was established at first to meet the urgent requirements of the time, was converted into a permament institution after the close of the war. Officials were sent to all parts of the country to persuade the people to become members of the society, and in short every effort was taken to make the preparation in time of place as complete as possible so that it might do good service in time of emergency.

Coming to 1886, Japan joined the Red Cross Convention of Geneva, and the Haku-ai Sha amended its articles of association in May of the following year and changed its name to the Red Cross Society of Japan. At the same time the society was placed under the patronage of their Majesties the Emperor and Empress, and under the auspices of the Imperial Household Department and of the Army and the Navy. In carrying out that thorough reorganization and improvement the society aspired to be admitted into the circle of the Red Cross Societies existing in the West. This aspiration was soon gratified, and the Red Cross Society of Japan was, in due course, allowed by the Head Association at Geneva, to conclude a compact of mutual friendship and help with the sister associations of Europe.

On the carrying into effect of the revised Civil Code, it was decided to convert, in accordance with the provisions of the Code, the society into a corporation. This conversion was effected in 1901. At the same time the Government issued by Imperial Ordinance the Regulations relating to the Red Cross Society of Japan. The regulations, besides establishing in a distinct manner the relations existing between the Government and the society, placed the latter on a sound and firm basis.

The society gets almost universal support from the people at large and the rate at which the members are increasing in num-

ber has never been paralleled. At the end of 1887 the list contained only about 2,100 names, but the end of June of 1902 it had risen to no less than 796,045. The number of new admissions has been especially rapid since the Japan-China war, as many as a hundred thusand new members being received every year. With this great increase in the number of members, the amount of the regular subscription to the funds of the society also showed a great advance. It reached 2,153,202 *yen* and a fraction at the end of June 1902.

The work undertaken by the society makes a creditable record, and it was especially on the occasion of the war in question that the society discharged its duty with signal efficiency. During that war 1,587 men and women attended the service, and the scope of their work comprised the Reserve Army Hospitals at Hiroshima and nine other places, the temporary military hospitals in China and Korea, the permanent war hospitals, and also the conveyance by sea of invalid officers and men. Further, the society attended to such of the prisoners at Tokyo and other three places as were under medical treatment and of course undertook the nursing and medical service when the Imperial troops were dispatched to Formosa to suppress the insurgents. Altogether 101,423 invalids including 1,484 prisoners were cared for by the officials and nurses of the society.

The part which the society played during the Boxer trouble was equally distinguished. The society dispatched on that occasion 476 officials and nurses who were made to attend to the medical and nursing service at the Military Reserve Hospital in Hiroshima and at Taku and Tientsin. The society's hospital steamers *Hakuai Maru* and the *Kosai Maru* rendered invaluable service on this occasion and kept on conveying invalids from Northern China to Hiroshima. These sister steamers, it may be added, had been built soon after the Japan-China war as a result of the experience acquired during that time, and the Boxer trouble supplied unique opportunity for testing the new system. It need hardly be added that the test was attended by the most complete success. The invalids looked after by the society at the time numbered 11,348 including 245 French officers and 4 Austrians.

Apart from the two memorable cases of war service mentioned above, the society has also undertaken several times to nurse people who were wounded in calamities accidental and natural. Among the principal cases of this kind in which the service of the society were requisitioned, we may mention the eruption of Mount Bandai in the province of Iwashiro in 1888, the shipwreck of the Turkish man-of-war in 1890 off the coast of Kii, the disastrous earthquack in the following year in Mino and Owari, the tidal waves in the Sanriku districts, the earthquake at Akita in 1896, and the fire at Hachioji (Tokyo prefecture) in 1897. Besides, the local branches of the society undertook on many occasions the same benevolent work every time floods and other disasters overtook the provinces near to them.

Any imperfection formerly felt in the internal arrangement of the society's work,—and there were many points not satisfactory, has been removed since the Japan-China war, and the society is no longer subject to inconvenience arising from the insufficiency of materials and *personnel.* This efficient arrangement is also seen at all the local branches. According to the returns compiled in June of 1902, the society's medical force comprised 279 doctors, 1,558 nurses, 640 assistant nurses, besides 634 students and 128 pupils.

The society maintains a regular system of training nurses, this system put in operation from 1890. At the head office the term of training extends for three years of which one half is devoted to science of nursing and the other half to practical side. At a branch office the term is one year shorter, the two years being equally divided to scientic and practical training. From 1896 a briefer course was created for turning out under-nurses. The term of this special course extends for ten months, equally divided into science and practice training.

The Red Cross Hospital was opened in 1885 at Iida-machi, Tokyo, and is an organ indispensable for training officials and nurses needed for the corps of the society. With the change of the title of the society and the expansion of its scope, the hospital was newly erected, on a much enlarged system, in the premises of the Imperial Household's land at Shibuya, a suburb of Tokyo. The work of construction was completed in 1891. The hospital undertakes in

time of peace the training of doctors and nurses, so that it may with pomptitude discharge its duty in time of war or other emergency. In order to render the training as efficient as possible patients suffering from disease are admitted to the hospital for treatment. Of the people thus cared for, those who have means are made to pay for the medication and board, but those who are poor are given treatment free of charge. In time of war the hospital is converted into a reserve military hospital, as it was actually the case on the occasion of the Japan-China war, when the hospital was converted into No. 3 branch hospital of the Tokyo Reserve Military Hospital and took under it a number of invalids both Japanese and foreign.

PART VII.

COMMUNICATIONS.

CHAPTER I.—Post.

Introductory—Official Organization—Transmission and Delivery—Kinds and Fees of Mail Matter—Foreign Mail and Parcel Post—Receipts and Disbursements.

I. INTRODUCTORY.

General Remarks.—It was in 1871 that the postal system modelled on the Western mail service was first adopted in Japan. It must not be supposed that that was the first post system ever originated in Japan, for though in an imperfect form the service had long existed in our country. The "post station" system that was first established in the second year of the reign of the Empress Jingo (202 A. D.), when the Empress undertook an expedition against Korea, marked, theoretically speaking, the appearance af an embryonic postal service administration. The rudimentary system was brought to greater perfection in 646 A. D. by the introduction of the various administrative institutions, of the Tung Dynasty, China. The setting up of the Regency Office at Kamakura by Yoritomo was followed by a further improvement in the system and in the conveyance of letters by carriers. The mode of managing roads and ferries in this connection was specially well arranged at that time. The carrier system, however, received a serious reverse during the Regency of the Ashikaga, and by

In Ancient Times.

prolonged civil disorders that marked the administration of that weak Regency. In fact the system was practically suspended.

In Modern Times.

With the rise of Nobunaga the service was restored; old roads and bridges were repaired, and Hideyoshi that succeeded Nobunaga carried the service to a state of greater perfection. The service, though very much developed and expanded as compared with that which had been prevailing in the period of Taikwa, was confined to the conveyance of official letters, so that the general public did not participate in the benefit.

The system was very much advanced during the Tokugawa perion and it was then made much more efficient and comprehensive in operation. Official letters were regularly despatched by the Shogunate to the province by carriers, and the feudal lords residing in the provinces also employed regular carriers to act as messengers between their fiefs and the residential seat of the Shogunate. What was still more noteworthy was the fact that the private post service was first brought into existence. This originated in the thrice-a-month system of correspondence that had been maintained betwen the Shogunate's retainers on duty at the Castle of Ōsaka and their families in Yedo. The shrewd merchants of Ōsaka took a hint from this system of correspondence and some of them opened a regular system of carriers to convey private letters between the three important cities of Yedo, Kyoto and Ōsaka. The business proved quite renumerative as indeed it proved highly convenient to the people. For more than two centuries this primitive system of postal service was in vogue in Japan.

After the Restoration.

On the advent of the Imperial Government it was decided to run the postal service modelled on the Western system as an official undertaking, as it perceived that the business could not be carried on with efficiency and benefit as private enterpises.. In January of 1871 the new Postal Service System was promulgated, and was put in force by way of trial between Tokyo, Osaka and Kyoto in March of the same year. The hour of transmission was previously announced and a number of carriers were despatched every day. The benefit of correspondence was extended to all the towns and villages

lying along the trunk route connecting the three principal cities. The local authorities were made to take charge of the business of transmitting the mails from one post to another and also the sale of postal stamps.

This system highly imperfect as it was compared with the one now in operation was however memorable improvement with what had been in operation before, and for the first time the general community or strictly speaking a limited portion of the general community was enabled to participate in the benefit of the postal service. The new departure thus inaugurated was carried to greater perfection and improvements were made in quick succession. In March of the 1872 year a thrice-a-day service was opened for the city of Tokyo and for the delivery of both letters and newspapers. Soon a five-time-a-day service was established between Tokyo and Yokohama, and it was announced at the same time that people were forbidden to engage as their business the transmission and delivery of letters not bearing postage stamps.

It was April of 1873 postal fee was made uniform irrespective of distance, except in case of city mails and suburban extra fee mails. In November of that year the post cards and wrappers were issued, and in the same year the Post Exchange Contract was concluded with the United States of America. In June of the following year Japan joined the International Postal Union, by which the arrangement of postal communication between Japan and the foreign countries was somewhat completed. In view of this the British Post Office that had been existing in Yokohama, Kobe and Nagasaki were withdrawn in December of 1879, while a year hence the French Post Office at Yokohama was also withdrawn, and the postal administrative autonomy was first secured by Japan. In December of 1882 were issued new Postal Regulations which inaugurated various new departures, such as the abolition of the system of city postal service, local postal service and suburban extra postal fee system. In other words, the rate of fee was made uniform for the whole country. In December of 1884 the postal card with reply paid was issued. By the further amendment of the regulations carried out in August of 1889 the fee for forwarding periodically printed matters was reduced by one half, the weight allowed for

the fourth class matters, that is books, drawings, pitures, sample, and patterns, was increased fourfold, a new item of seeds of agricultural produce was added to the fourth class matter cotegory. In June of 1892 the Parcel Post Regulations were issued and were enforced from October of the same year. In June of the same year the military post service was established for the benefit of the troops dispatched to Korea in connection with the insurrection that had broken out in that country In a similar way the field post service was organized on the occasion of the Japan-China War and the means of correspondence between the front and the home country was provided. The special facilities for transmitting seeds of agricultural produce were made more efficient in operation, by setting apart such mail matter as fifth class matter and by reducing the rate of fee to one half of what was before. A part of the Postal Regulations was amended in 1899, and while making the allowances of weight more liberal, the rate of fee for first and second class mail matter was somewhat advanced.

Latest improvements.—Such in the main is the history ot our postal service since it was inaugurated early in the era. It serves to demonstrate with what great strides this important factor of civilization has developed in Japan. The improvement so far effected was sufficiently striking and has entirely transformed the costly and primitive system that had prevailed before the Restoration. Still the service went on improving to satisfy with greater efficiency the new demand engendered by the progress of society and of economic affairs. It was in consideration of this requirement that in March, 1900, the Postal Regulations and the Parcel Post Regulations were further improved so that they might be adopted to the requirements of the new circumstances. The new regulations were put in force from October 1st of the same year. This last amendment may be regarded as constituting a new chapter in the history of our postal service, for the improvement it effected was as complete as circumstances required. The principal features of the service as improved by the last amendment may be enumerated as follows:—

1. The amendment sets forth with greater distinctness the principle

declaring the postal service to be a Government monopoly. Provisions of similar import had existed previously but it was considered necessary to make this amendment in order to define with greater accuracy the legitimate field of action of those engaged in the business of carrying postal matter.

2. The secrecy of letters was guarded with greater strictness This had also been provided for previously in accordance with the arrangements for safeguarding the secrecy of letters referred to in the Imperial Constitution. The amendment in question was directed towards safeguarding in this connection the action of those who are to deal with letters.

3. The amendment enacted a new provision for extending to post offices and officials various privileges calculated to ensure the prompt and safe treatment of mail matter.

4. The reimboursement in case of damage that had previously been confined to parcels with value declared has been extended in scope and made to include ordinary mail matter.

5. The collecting of trade charge system that had previously been confined in operation to the parcel post has been extended to ordinary mail matter.

6. The letter-cards were newly issued and the system of private cards has been instituted.

7. The collection of cash system has been newly instituted and a provision for collecting cash against documents of value by safe and sure means has been made.

8. The nature of postal fees has been made more distinct than before, so that the treatment of the National Tax Law concerning arrears in payment is now applicable to the fee.

9. A new provision has been made for altering the address of or withdrawing mail matter or withdrawing the application of trade charges or collection of cash.

Minor changes carried out by the amendment were those relating to fees for mail matter, of registered mails, of value declared mails, etc. In December of 1901 the fee for value declared mail matter was altered, and envelopes and wrappers for sending such matter were issued at the same time to ensure their safe transmission.

II. OFFICIAL ORGANIZATION.

The efficiency of the service depending to no small extent on the relative perfection of the organization of offices devoted to it, the history of the change of the organization shall be briefly described in this section.

Central Office of Control.—On the occasion of the inauguration of the Western postal system all matters in connection with this system were under the control of the Department of Civil Affairs, to be transferred, on the abolition of that Department to the Department of Finance, next to the Department of Agriculture and Commerce, and lastly to the Department of Communications which was created in December of 1885. In that way the departments having direct charge of postal business have been frequently changed, and at present the Bureau of Communications holds the power of dealing with matters relating to posts, postal money orders, postal savings, telegraph, and telephone.

Control of Local Postal Service.—At first the control of local postal service was undertaken by the local administrative offices, but this system was discontinued in 1883 when the Postal Districts Regulations were elaborated and the provincial districts were marked out into a regular system of postal sections each subordinate to the other. Each main post section had under it a number of postal sub-sections with a postal office established in it. The main postal section was made to control the services at all the post offices existing in its jurisdiction. By changes and revisions subsequently carried out the 1st class Post and Telegraph Offices are now generally made to attend to the duty of controlling postal and telegraph matter. These Offices at present number 16 throughout the country.

Post Offices and Agencies.—At first the post offices were classified into 1st to 4th grades, with post agencies constituting the fifth grade. In 1886 the regular post offices were subdivided into three grades, and in the same year a postal office and a telegraph office that had previously existed as independent establishments were, according to local circumstances, combined into one

office, and made to undertake the dual services. At present most of these offices undertake in addition the telephone service. The post agencies were first established in 1875 in places separated by a greater or less distance from either a regular post office or a branch office. Many of them have since been entrusted with the business of postal savings and parcel post services.

During the inception stage of the service, *i.e.* in 1871, the number of offices did not exceed 180. The offices newly established next year alone numbered 980. The expansion of the service went on with unabated force, so that by the end of 1882 the offices reached as many as 5,527. As the creation of new offices was determined upon according to the request of the local offices only, and without any interference from the central authorities, the distribution of the offices was not well proportioned to the relative density of the population. The authorities therefore decided to interfere and to turn out those offices that were judged not worth maintaining. The adoption of this new policy was soon shown in the number of offices, which began from 1883 to diminish more or less rapidly. The result was that the number had declined to 4,094 by the end of 1889 that is to say 1,433 less than that at the end of 1882. The proper balance between the number of offices and the relative density of population having been duly established, any change that was to be made in the future was in the direction of addition instead of diminution. The new departure began to operate after 1890, and new offices were created as circumstances required. By the end of the 1902 fiscal year the number had grown to 5,485 (consisting of 16 1st-class offices, 79 2nd-class offices, 3,984 3rd-class offices, 45 branch offices, and 1,353 agencies). This number corresponds to the ratio of 1 office per 4.52 square *ri* and per 8,343 people.

Parcel Post Service.—The parcel post service was, in the year of its inception, that is in 1892, confined only to the post offices situated in the principal cities, and therefore it was undertaken at only 287 offices. The service was gradually extended, and since 1900 no postal office that has been dealing with ordinary mail matter has not undertaken the parcel service as well.

Post Service in China and Korea.—In April of 1876 Japan

opened its own post office at Shanghai, China, and that was the first foreign office established abroad. In December of the same year a similar office was started at Fusan, Korea. Since that time a large number of postal offices have been set up in these countries, so that at the end of the 1902 year 22 such outlying offices were counted, these being located at the following places:—

China:—Shanghai, Tientsin, Chefoo, Suchow, Hangchow, Shasi, Amoi, Hankow, Peking, Fuchow, Newchwang, Nanking.

Korea:—Fusan, Gensan, Ninsen, Mukpo, Chinnanpo, Masan, Kunsan, Songjin, Seoul, Pingyang.

III. TRANSMISSION AND DELIVERY.

Transmission.—The postal routes as subdivided in 1883 were of three classes; viz., main, medium, and minor lines.

As the system exists to-day it consists of railroads, water ways, sailed track and ordinary highways. Each of them is subdivided into four grades according to the relative importance of the service. With Tokyo as the starting line, the lines connecting it with the Governor-General's Office of Formosa, the Hokkaidō administration Office, the places where Military Division or Admiralties are located, and lastly with places where trade or manufacture is actively carried on—these lines are set apart as the 1st class service routes, the remaining three routes being determined according to their relative importance. The number of transmission service is also arranged according to the grade of the routes. For the 1st-class routes four services a day from two extremes for ordinary mail-matter, and not more three services a day for parcel post. One service is reduced for each lower grade route, and for the 4th grade the number of service is to be determined according to the local requirement. At the end of the 1902 year the postal routes thus determined extended as follows in unit of Japanese *ri*:—

	1st Class.	2nd Class.	3rd Class.	4th Class.	Inter-mediary.	Total.
Ordinary Mail ...	3,083	5,196	7,763	6,063	515	22,619
Parcel Post	3,050	5,051	7,715	6,043	469	22,328

Note:—In the above total 1,728 *ri* in railroad service and 8,067 *ri* in waterway are comprised.

DELIVERY.—Regular rules relating to delivery were first fixed in 1883 by drawing up the Postal Delivery Limit Regulations. The delivery limit was first established at that time. This was further amended in 1885 by arranging the urban delivery limit. According to the two systems all the places within the radius of 6 *cho* from one city or town or village proper are included within the delivery limit of a postal office situated in such city or town or village, the places outside that radius being excluded from the delivery limit. In 1885 the standard of delivery service was changed, and the grade of that service was determined according to the number of items of mail matter requiring to be handled, and in 1891 another amendment in a similar direction was made.

The delivery service of parcel post requiring somewhat different treatment to that of ordinary mail matter, it was laid down in 1893 that except at specified offices the number of delivery should be confined to once a day, that number being capable of an increase according to local conditions. In the same year it was arranged that the transmission routes of parcel matter should be made distinct for the present from that of ordinary mail matter, and that the number of transmission services and the mode thereof should be arranged for each route. In 1900 the number of services was regularly fixed within a certain limit, and it was announced that in places where the ordinary postal routes and parcel post routes do not require separation the two may be transmitted by the same service. However the main principle that the two services should be carried on distinct routes was left unchanged.

IV. KIND OF MAIL MATTER AND FEE.

LIST OF MAIL MATTER.—As a result of changes and amendments extended to the Regulations which were first issued in 1871 as already described, the list of mail matter at present embraces the following:—

1st Class	Letters.
2nd Class	Postal Cards.
3rd Class	Periodicals issued not less than once a month.

4th Class { Books, Printed Matter, Business Forms, Photographs, Pictures, Drawings, Samples and Designs of Goods, Natural History Specimens.

5th Class Seeds of Agricultural Produce.

Note :—Postal cards must be those issued by the Government or must conform with the prescribed forms determined by the Government, while matter coming under the 3rd class must previously obtain the acknowledgement of the Department of Communications. Mail matter coming under the 3rd and lower classes must not be sealed.

Fee.—The fee was graded at first according to the distance of transmission, but in less than two years after the inception of the postal system the fee was made almost uniform irrespective of distance, and the amendment in 1883 completed this arrangement.

Special Treatment of Mail Matter.—A brief account will be given below of the special treatment of mail matter.

a. Express Delivery.—This service was at first extended to all mail matter requiring prompt delivery. In 1873 a special delivery service was established for benefit of those living in the places not possessing post offices, or places which being on a branch postal route could not enjoy the benefit of delivery service every day. In 1882 the two modes of services were combined into one under the style of "express delivery," the operation being divided into urban and suburban services. The fee for urban delivery was divided into two kinds, according to the size of a city, while that for suburban service was collected according to distance of transmission. By that year's amendment the express delivery matter was confined to registered letters alone, and the fee was made payable in advance. Subsequently parcel post and value-declared mail matter were included in the list of the express delivery mail matter.

b. "Poste Restante."—Initiated in 1873, the benefit of this service was extended to letters only, the period of keeping such letters in custody at the post office of destination being three months. Next year the service was extended to other kinds of mail matter besides letters, and by the amended Postal Regulations of 1900, the period of keeping this kind of mail matter was limited to thirty days. At the same time the service of giving notice to the sender of the arrival of a *poste restante* mail for

him was inaugurated, such notice to be given only when the prescribed fee has been paid in.

c. Delivery Certificate.—The delivery certificate system was started for the first time in 1892. The service is extended only to parcel post, registered letters, and value-declared ordinary mails.

d. Registration.—This service took its origin in the system inaugurated in 1871 for sending replies or receipts by an addressee to a sender who forwarded to the other any mail matter of special importance. The addressee had to pay double fee. This service was superseded in November of the same year by the system of simpler registration. A uniform amount of fee is paid over and above the ordinary postal fee.

e. Value-declared Mail.—In 1892 when the parcel post service was brought into existence, this arrangement was adopted and subsequently it was extended to ordinary mail matter containing valuable articles, although no registered mail matter can be treated as value declared matter. The amount of value to be declared was at first limited to not more than 15 *yen*, but afterwards the limit has been raised to 1,000 *yen*. Value-declared mail matter must bear a regulation wrapper issued by the Communications Department.

f. Collection of Trade Charges.—The collection of trade charge system was an innovation adopted in 1896 in connection with the parcel post service. The amount to be collected was at first limited to not more than 50 *yen*. With the expansion of the value-declared mail service in 1900 the collection was raised to 300 *yen* at the same time.

g. Collection of Cash.—This service was adopted in 1900. The amount of one collection is limited to 300 *yen*.

Frank Post.—The foregoing description applies to mail matter on which fees are paid. A short remark will next be made on the system of frank post, which was first enacted in 1872. At that time the representations, petitions and the like sent to Government offices were free of charge; also letters between post offices and postal officials relating to postal business were also franked. Manuscripts for newspapers were also franked, provided they were in open envelope

and weighed not more than 4 *momme*, and this privilege was extended in 1876 to samples of seeds of agricultural produce and experimental samples provided they could be regarded as of public utility. This arrangement has since been modified and by the amended Postal Law promulgated in 1900 it was provided that only mail matter relating to post, postal money orders, postal savings banks, telegraphs and telephones were to be sent free of charge. Other things that were transmitted as franks were military postal matter, and on the occasion of the Japan-China war mail matter sent from the front by troops, fleet, military offices, and combatants and civilians were exempted from any fee, except those that were treated in accordance with the International Postal League.

Volume of Ordinary Mail Service.—The quantity of mail matter has shown remarkable progress with the development of the mechanism of the service and as a result of greater activity of correspondence among the people. In 1872 the mail matter transmitted (including foreign mail, this remark applying to the figures mentioned afterwards in this paragraph) numbered 2,500,0000, in 1882 they increased to 99,300,000; in 1892 to 2,778,000,000; and in the 1902 fiscal year to 899,880,000. The transmission per one of the population that numbered six and a fraction ten years ago has now increased to over 19. The relative number of transmissions of mail matter by our post offices will be shown below:—

Ordinary mail matter.

Year.	Letters.	Post-Cards.	Newspapers and Magazines.
1893	83,658,531	158,147,967	56,968,571
1894	97,899,192	190,692,558	80,415,635
1895	113,425,548	228,503,898	78,963,325
1896	126,872,386	262,867,761	86,803,337
1897	148,254,148	287,069,246	88,266,273
1898	160,391,547	327,261,448	90,871,444
1899	152,122,551	330,859,267	109,028,464
1900	175,922,981	395,249,632	133,391,078
1901	190,951,188	436,673,345	139,116,263
1902	208,563,145	483,986,374	148,770,343

Year.	Ordinary Mail Matter. Other.	Total.	Parcels.	Total.
1893	22,120,824	320,895,893	734,716	321,630,609
1894	23,511,077	392,518,462	1,270,039	393,725,501
1895	25,491,939	446,384,710	1,687,335	448,072,045
1896	26,816,198	503,359,682	2,738,412	506,098,094
1897	27,326,076	550,915,743	4,108,488	555,024,231
1898	26,822,115	605,346,554	4,916,495	610,263,049
1899	29,475,285	621,485,567	5,843,669	627,329,236
1900	35,162,536	739,526,227	7,645,558	747,171,785
1901	40,086,002	806,826,798	9,272,791	816,099,589
1902	48,222,377	889,542,239	10,338,897	899,881,136

V. FOREIGN MAIL AND PARCEL POST.

History of Foreign Mail.—When the great work of the Restoration had been accomplished, and intercourse with foreign countries became closer, the necessity of adopting more expeditious means of reciprocal correspondence began to be keenly felt. The Government, therefore, made an arrangement about foreign mail service and notified the public to that effect in March, 1872, though at that time the means of internal communication was yet far from complete. However, in those days, the foreign mail service could be carried on by our Government only through the Postal Agencies of Great Britain, the United States of America and France which were actually conducting postal business in our open ports, Yokohama, Kobe and Nagasaki. When the Postal Convention concluded between the United States of America and Japan, came into operation on January 1st of 1875 the direct exchange of mail matter with foreign countries was for the first time effected. On this memorable day the United States Post Offices established in our country were closed. Since that time, the management of foreign mails has been markedly developed and improved by the earnest and persevering efforts of the authorities and it has secured so much confidence both at home and abroad, that any necessity for continuing British and French Postal Agencies was no longer perceived, with the result that the former were closed

on December 31st of 1880 and the latter on March 31st of the following year. But in those days, correspondence with all foreign countries besides the United States of America, could be transmitted only through the medium of that country, in accordance with the stipulations of the Postal Convention concluded between Japan and the United States of America. The rate of foreign postage was consequently high and caused much inconvenience.

In May, 1876, H. I. J. M's Envoy Extraordinary and Minister Plenipotentiary at the Court of the German Emperor, sent a telegram to the Department of Foreign Affairs here, inquiring whether the Government intended to take part in the International Postal Congress which was to meet in Paris the next year. After deliberation, the Japanese Government decided to take part in the Congress, and instructed him to request the Swiss Government to propose our admission into the Post Union. As a result of the negotiation our country obtained the full right of entering the General Postal Union in 1877.

The Government promulgated General Postal Union Treaty in Imperial Ordinance No. 45 on June 19th of that year, and on the same day the revised table of foreign postage was published in Imperial Ordinance No. 46, which was to take effect on the following day. The revised rates of postage were much lower and more uniform than the former rates, so the operation of the foreign mail service was greatly facilitated. On the occasion of the International Postal Congress convened at Paris on the first day of May, of 1878, Japan caused its Envoy Extraordinary and Minister Plenipotentiary in Paris and another gentleman to attend the Congress, with full power to complete the arrangements. On the first day of June of the same year, the Universal Postal Union Convention was concluded and signed by the plenipotentaries of our and other countries. The new convention was promulgated in March of the following year in Imperial Ordinance No. 11, to take effect on the first day of April.

It was three years after the formation of the Universal Postal Union that Japan joined it, and therefore our country, while being the first country in the Far East that was admitted into it, was not much behind even some Occidental countries in profiting by

this international postal service. At present about 58 countries are on the list of the Union, and of that number 32 joined after Japan had been admitted into it.

Since this country was first represented by its delegates at the second Postal Congress in Paris in 1878 it has been represented at every Postal Congress held subsequently and has contributed more or less to the work of amending the Universal Postal Convention.

The foreign postage rates were often modified but the final and thoroughgoing revision took place especially in 1897 in connection with the change of our monetary system, and the rate then fixed upon is the rate at present in force. In September of 1900 exchange of registered articles with trade charges was opened between our country and Germany, Austria-Hungary, Belgium, Switzerland, Luxemburg and Roumania. On June 20th of 1902 which was the 25th anniversary of the admission of Japan into the Universal Postal Union, a ceremony was carried out by our authorities to celebrate the occasion. In December of the same year Japan joined the Universal Postal League relating to value-declared letters and postal boxes.

History of Foreign Parcel Post.—The foreign parcel post service was first established in 1879 when an agreement was concluded with the Colonial Government of Hongkong. At first only eight post offices, namely, those in Tokyo, Osaka, Kyoto, Yokohama, Kobe, Nagasaki, Hakodate and Niigata were authorized to receive foreign parcels. These parcels were treated in the same manner as articles sent by letter post, but in 1890 a treaty for the exchange of parcels was concluded with Canada, in 1894 with Germany, in 1895 with Great Britain, and in 1898 with France. In 1901, parcel post was begun with Siam through the intermediary of the Hongkong Postal Administration. The number of offices authorized to transact this business have been increased, and now every Post Office is vested with this power. However the efficiency of the service was not considered quite satisfactory inasmuch as the parcel post agreement in question did not undertake special treatment, as that relating to value declared business, collection of trade charges, express delivery, the withdrawal of mail matters or alteration of address. It was therefore not quite satisfactory. Japan applied to the Government of Switzerland on the 25th anniversary of its admission to the

Universal Postal Service for permission to join the International Parcel Post Convention concluded at Washington, U. S. A. The permission being obtained in time that convention was carried into effect from December of 1902.

As a result of Japan's having joined the Convention the Parcel Post Agreements previously concluded with Germany and France have been rescinded as a matter of course.

NUMBER OF FOREIGN MAIL MATTER.—In the 1902 fiscal year the number of ordinary mail matter dispatched abroad or arriving in Japan were as follows:—

ASIA.

	No. of Dispatches.	No. of Arrivals.
China	1,836,341	1,148,978
Korea	1,747,436	988,027
British Colonies	186,508	193,379
Russia	133,967	51,547
British India	49,173	74,749
The Philippines	46,677	33,796
Netherland Colonies	14,688	15,883
French Colonies	9,792	15,714
Siam	9,511	4,163
Portuguese Colonies	4,732	3,884
Others	14,590	17,239

EUROPE.

Great Britain	362,912	636,418
Germany	257,642	353,173
France	116,146	172,589
Austria	25,897	23,647
Russia	34,341	40,043
Italy	41,396	31,296
Belgium	16,314	16,669
Hungary	9,517	8,264
Switzerland	21,030	19,756
Netherland	14,100	14,846
Denmark	4,450	4,771
Spain	4,924	5,879
Norway	6,050	5,488
Sweden	3,904	3,474
Portugal	844	2,619
Others	5,396	6,088

AMERICA.

United States of America	1,042,942	1,277,461
Canada...	102,288	139,780
Mexico	4,749	2,387
Peru	2,640	3,772
Others	6,953	5,280

AFRICA.

Egypt	4,630	12,022
British Colonies	3,169	1,964
Others	3,241	2,045

AUSTRALASIA.

Hawaii	534,434	1,622,387
British Colonies	86,223	39,688
French Colonies	6,547	11,110
Others	487	242

In the 1902 fiscal year therefore the foreign mails numbered over 6,776,000 in dispatches and over 7,010,000 in arrivals.

Number of Foreign Parcels.—As foreign parcel post mails were exchanged up to the same year only with Great Britain, Germany, France and Canada, the dispaches in that year numbered only 10,377 and the arrivals 13,311. Of those numbers, those exchanged with Great Britain constituted the bulk.

Mail and Parcels in China and Korea:—During the same year the Japanese post offices in China and Korea dealt with altogether 2,900,335 ordinary mails and parcels put together.

VI. RECEIPTS AND DISBURSEMENTS.

Account relating to Ordinary Mail Matter.—The receipts of ordinary postal matter necessarily made striking progress with the advance of the service. In 1873 the receipts amounted to only 225,000 *yen* in round numbers, to be advanced to over 1,140,000

yen in 1879 and lastly to over 11,600,000 *yen* approximately in the 1902 fiscal year. In a similar way the disbursements that stood at over 231,000 *yen* in 1873 advanced to over 1,000,900 *yen* in 1879 and finally to over 7,840,000 *yen* approximately in the 1902 fiscal year. This point is more clearly shown in the following figures giving receipts and disbursement during the last nine years:—

RECEIPT AND DISBURSEMENTS RELATING TO ORDINARY MAIL MATTER.

Fiscal Year.	Receipts.	Disbursements.	Disbursements per 100 *yen* Receipts.
	yen.	*yen.*	*yen.*
1894	4,730,092	2,875,627	60.8
1895	5,224,207	3,183,359	60.9
1896	5,973,611	3,729,777	62.4
1897	6,579,667	4,296,789	65.3
1898	7,294,851	5,073,240	69.5
1899	9,648,437	6,022,788	62.4
1900	10,508,995	6,616,923	63.0
1901	10,677,937	7,286,030	68.2
1902	11,609,679	7,840,885	67.5

Account relating to Parcel Post.—The ordinary receipts from the parcel post were 195,400 *yen* approximately in the 1894 fiscal year, as against the disbursements amounting to about 298,000 *yen*. Since then the receipts have increased from 15 to more than 60 per cent every year, while the other account has advanced at the rate of from 10 to over 40 per cent. though in the 1896 fiscal year the number of offices dealing with the parcel post owing to a sudden increase of the rate rose as high as 90 per cent. In general disbursements have surpassed receipts, the rate of the former being 153 against 100 of the other in the 1894 fiscal year, and 117 against 100 in the 1901 fiscal year. In the following year the two accounts were brought almost to a proper balance.

The following table will demonstrate the relative amount of receipts and disbursements:—

Fiscal Year.	Receipts.	Disbursements.	Disbursements per 100 *yen* Receipts.
	yen.	*yen.*	*yen.*
1894	195,493	298,672	152.8
1895	281,363	353,801	125.7
1896	468,524	699,685	149.3
1897	723,335	988,501	136.7
8988	883,887	1,013,946	114,7
1809	1,065,975	1,404,901	131.8
1900	1,338,873	1,642,332	122.7
1901	1,540,561	1,800,669	116.9
1902	1,684,263	1,690,467	100.4

CHAPTER II.—Postal Money Orders.

Domestic Service—Foreign Service—Receipts and Disbursements.

I. DOMESTIC MONEY ORDERS.

HISTORY.—The postal money order business was inaugurated about four years later than the general post service, that is in January of 1875. As banking facilities had not yet advanced much at that time this convenient mode of remittance was eagerly welcomed by the public, so that although the ordinary money order service alone was undertaken the amount of money dealt with reached as much as 2,120,000 *yen* approximately in the opening year of the service. The necessarily imperfect organization of local post offices and the difficulty that existed with regard to supplying outlying offices with funds obliged the authorities to restrict the amount of the remittance made by a single person, except when the remittances were drawn on Tokyo, Kyoto, Osaka, Yokohama or Kobe. Later this unrestricted remittance was extended to all places possessing provincial administration offices, but as it was discovered that businessmen began to abuse this service for the purpose of remitting large amount of money, the Government was soon obliged to limit more or less the amount of postal remittance.

In 1885 the principle embodied in the postal money order system was extended to the telegraph service and at the same time the petty money order service was inaugurated and the fee for the use of ordinary money order was somewhat reduced.

Several alterations and improvements have since been effected. To mention some of them, in April, 1890, the payment of a fee in cash was superseded by payment with postal stamps, and in the following year the 3rd class post offices were made to deal with the money order business even on Sundays and other holidays. Ten years after this all-the-year round-system was enforced throughout the

country. During the Japan-China war the field postal money business was established for the benefit of those at the front, while in April of 1899 the maximum limit of a single money order that had been fixed at not more than 30 *yen* was increased to 50 *yen*. The system of paying money orders at residences was adopted in January of 1900 and was first put into effect in the principal cities, to be afterward extended gradually throughout the country. In October of the same year the Postal Money Order Law was enforced and several amendments were effected, as, for instance, the abolition of the system of limiting the number of orders to be issued in one day for the same person, and the increase of maximum limit of the petty money order from 3 to 5 *yen*. In April of 1901 a provision was made for the transfer of a money order by means of crossing it. In consequence of all such improvements the service has been carried to the state of greater perfection and efficiency than it was before.

STATISTICS OF THE SERVICE;—The progress of the service since its inception is shown below.—

Year.	No. of Offices.	Domestic Order.	
		No of Application.	Amount of Money.
			yen.
1875	222	115,703	2,123,146
1882	678	630,713	9,188,262
1892	2,276	2,944,622	23,872,453
1902	5,514	8,955,295	89,788,407

II. FOREIGN MONEY ORDERS.

HISTORY.—The foreign postal money order service was first established in December of 1897 by an agreement with the Hongkong Postal Administration for the exchange of postal money orders. The Yokohama Post Office opened this service for the first time in Japan in January 1880 and other offices were soon after given the same privilege. Since March of the same year the exchange of money orders with every colony in Australasia and the Straits

Settlements has been carried on. Arrangement for the exchange of postal money orders was concluded with Great Britain in 1881 and through the intermediary of the postal Administration of Great Britain money orders have been exchanged with Germany since January 1883, and with British India through Honkong. In the following year, another agreement was concluded with France. In February, 1885, arrangements were concluded for the exchange of postal money orders with all the countries of Europe and America and all the British colonies through the intermediary of the Postal Administration of Great Britain. An agreement was also concluded with the United States of America that year. In that year also, our country joined the International Postal Money Order Agreement which had been formed in accordance with the stipulations of Article XIII of the Universal Postal Convention concluded at the Universal Postal Congress assembled at Paris in 1878. At first Japan transacted direct exchange of money orders with only Germany, Austria-Hungary, Bulgaria, Switzerland, Luxemburg, Roumania and Belgium, while with other countries the exchange was effected through the intermediary of the Postal Administrations of Great Britain and Hongkong. The same agreements were concluded with Italy in 1886, and with Canada, in 1889. As to the international postal money orders "the Arrangement concerning the Service of Postal Money Order" concluded at the Universal Postal Congress which met in Washington in 1897 is in operation at present.

STATISTICS OF THE SERVICE.—The following figures will demonstrate the development of this service since its inception :—

Year.	Foreign Orders.			
	Orders Issued.		Orders Received.	
	No. of Application.	Amount of Money.	No. of Application.	Amount of Money.
1875	—	—	—	—
1882	316	5,570	108	2,279
1892	2,309	59,938	3,957	167,699
1902	8,407	244,560	52,437	3,817,522

III.—RECEIPTS AND DISBURSEMENTS.

Ordinary receipts stood at 260,000 *yen* approximately in 1894, to be advanced to about 816,000 *yen* in the year 1902. On the other hand disbursements amounted to about 295,000 *yen* and about 837,000 *yen* respectively. In 1894 the disbursements were at the rate of about 113 *yen* per 100 *yen* of receipt, and this ratio decreased 103 *yen* per 100 *yen* in 1902. Details may be gathered from the appended table.

RECEIPTS AND DISBURSEMENTS OF POSTAL MONEY ORDER SERVICE.

Fiscal Year.	Receipts.	Disbursements.
	yen.	*yen.*
1894	260,235	295,572
1895	314,115	324,646
1896	327,134	378,175
1897	384,702	430,727
1898	409,929	541,316
1899	519,084	754,060
1900	643,206	778,633
1901	687,561	826,161
1902	816,331	837,193

CHAPTER III.—Postal Savings Banks.

General Remarks.—This postal institution that has been in operation in the Occident from a long time back was, however, non-existent in Japan, until lately and our people thus lacked a convenient mode of laying by their little savings. In April of 1875 the Savings Bank Regulations were put in force by way of trial in Tokyo, and in December of the same year the service was extended throughout the country. Every possible expedient was brought into requisition for encouraging the people to avail themselves of this useful provision. This encouragement not unfrequently led on the part of the people to the abusing of the service, for some people did not scruple, especially in time of tradal inactivity, to make use of the savings service as a means of investing the funds for which they could find other more satifactory mode of investment, thereby swelling the volume of deposits to such big figures that it was even beyond the power of the Government to turn such an amount of money to good account. Consequently the authorities were not unfrequently obliged to lower the rate of interest on the deposits so as to prevent this abuse by the people. When in 1893 the ordinary Savings Bank Regulations were issued, and savings banks were created in many parts of the country, the business of the postal savings was somewhat affected. The post bank then introduced various changes in its business arrangements, simplified the mode of procedure and moreover somewhat raised the rate of interest. Coming to 1899 the post bank began to recover its former prosperity, and this state of things has continued to attend it side by side with the increasing progress of the ordinary saving bank business.

In March of 1900 the postal stamp saving service was established for the benefit of school-children, while in April of the following year the arrangement was made for accepting deposits made in the shape of national, local or municipal loan bonds or their coupons, the kind of documents to be acceptable being determined at the same time. In October of the same year the special Postal Saving

Deposits Regulation were enacted for the benefit of Japanese subjects residing in foreign countries not possessing Japanese post offices.

The limit of saving deposits at first ranged between the two extremes of 10 *sen* and 100 *yen* per annum, the yearly total, including interest, not to exceed 500 *yen* for a single person. These restrictions have frequently been modified, and at present a single deposit by any one person is limited not to less than 10 *sen*, and the deposit in one day by a single person must not exceed 50 *yen*, the aggregate deposits, including interest, not to exceed 500 *yen*. These limits may not be adhered to for philanthropic institutions. At the same time provision was made by which a depositor could purchase Government loan bonds in the custody of the Post Office, which provision has therefore enabled a depositor to keep a deposit exceeding the regulation limit, though part of the deposit may consist in loan bonds.

Rate of Interests.—The rate of interest of postal savings was at first fixed at 3 per cent. per annum, raised to 4 per cent., then to 5 per cent., next 6 per cent. and lastly to 7.2 per cent. the high water mark in the history of rate of postal saving institution. This happened in April 1881. The rate was then reduced and at present it stands at 4.8 per cent. In adding the interest to the principal it was at first done every six months, without prescribing any fixed period. Afterward the period of counting it was made in the months of June and December, and at present it is made only one time in the year, and on March 31st.

Amount of Savings Deposits.—The amount of savings deposits has on the whole made a satisfactory progress. For instance, at the end of 1885 it reached over 9,050,000 *yen*, which was more than 210 times that of the corresponding sum at the end of the year after the inception of the service. For several years subsequently the total amount underwent more or less fluctuation, though the movement was steadily in the direction of increase up to 1889. The occurrence of disastrous floods that year and the following year in many parts of the country occasioned the withdrawing of no small sum. During the outbreak of the Japan-China war the level of total sum that had gone on increasing before that time

was again brought down, but on the termination of the war and especially as a result of the war reward below 50 *yen* in amount having been given in the shape of deposit certificate the record at once rose to a high level. This was however temporary, for the economic disaster that followed the war ended in reducing the total. As result of the expansion of the service and of the encouragement extended to saving, the deposit business somewhat began to recover its former prosperity from 1899, till coming to March, 1903, the record of 1896 was broken. One thing that is satisfactory amidst these constant fluctuations in the volume of deposits is the fact that the number of depositors has steadily advanced, showing that the lower classes have began to a greater extent than before to acquire the habit of thrift and diligence. The introduction of the postal stamp deposits service in 1900 also seems to have been an important means in regard to this increase of the number of depositors.

STATISTICS OF THE SERVICE:—The movement of the saving bank business during the last ten years is demonstrated below by a table.

POSTAL SAVINGS BANKS.

At the End of March 31st.	Deposits.	Number of Depositors.	Average per one Depositor.
	yen.		*yen.*
1894	26,134,566	1,059,740	24.7
1895	25,865,201	1,107,829	23.3
1896	28,932,396	1,222,128	23.7
1897	28,215,914	1,272,317	22.2
1898	25,717,034	1,252,559	20.5
1899	21,968,529	1,239,669	17.7
1900	23,411,135	1,396,147	16.8
1901	23,965,437	1,979,640	12.1
1902	27,196,802	2,363,335	11.5
1903	29,554,725	2,859,143	10.3

In the matter of postal savings bank business there is no particular account to be called receipts. On the other hand, disbursements show a gradual increase in consequence of the rise of the price of commodities. In 1894 they amounted to about 193,000 *yen*, and the correspondent sum in 1902 was 549,000 *yen* approximately.

CHAPTER IV.—Telegraph.

Domestic Telegraph—Organization of the Service—Foreign Telegraph—Telegraphic Construction—Telegraph Apparatus and Materials.

I. DOMESTIC TELEGRAPH.

General Remarks.—It was in 1868 that Japan possessed for the first time the service of telegraph, but the introduction of telegraph instrument took place much earlier, for in 1853 two sets of the instrument were presented by Commodore Perry to the Tokugawa Shogunate. They were never applied to practical purpose. In fact the Shogunate was at that time in the throes of death and had no time to devote to studying telegraphy. Nor did the majority of the people possess any knowledge about this great civilizing factor: they rather detested the apparatus as outlandish, and the sets were left to mould and decay in a storehouse.

It was destined for the Restoration Government to inaugurate this important service of communication. That Government sent for an expert to England and in 1867 Tokyo and Yokohama, separated by 20 miles, were first connected by telegraph. This pioneer line suffered much from the persecution and maltreatment of the ignorant masses, who betrayed their simplicity by regarding telegraphy as a sort of watch-craft, and taxed the patience of the Government by frequently injuring the line. The task of guarding it alone was no easy matter. Fortunately, while the Government was firmly resolved to maintain the service and did not spare trouble and expense to improve it, the people too were soon convinced of the utility and importance of the service, so that the telegraph lines were no longer in danger of demolition. In 1873 the Telegraph Code and the Telegraph Service Rules were promulgated, and the service was for the first time placed on a regular basis. However it was not till the outbreak of the civil war in Kyushū that the telegraph service could demonstrate with convincing efficacy its usefulness and

importance. After that time and especially owing to the Emperor's tour round Japan in the following year of that trouble, the progress of the telegraph business was very rapid, and many were the telegraph offices that were newly opened at that time. At the same time the country joined the Universal Telegraph Union, and thus both internally and externally the telegraph service was placed on a fair road of satisfactory development.

The state of market after the civil war and a sudden activity of business occasioned impressed the people with the necessity of telegraphic communications. The same people who only a few years before regarded telegraph with awe and superstition now began to vie each other in applying to the authorities for the construction of lines in their own districts, and even offered to contribute the money required for the work. The authorities decided to avail themselves of this new tendency on the part of the people, accepted the contribution in cases where the acceptance was regarded useful, and thus by the combined efforts of Government and people the telegraph service was expanded. This was the state of affairs prevailing about 1881, and it may be regarded as the first period of expansion.

The fall of paper considerably below par in consequence of its excessive issue on the occasion of the civil trouble in Kyushū and the marked rise of the price of commodities, and the reaction that began to make appearance about 1883 by the issue of convertible bank notes naturally resulted in largely bringing down the market prices, with a depression of trade. This state of affairs could not but affect the Government work, and its telegraphic business therefore did suffer much. On account of this fact, and also owing to the lines having already been constructed by that time through all the important districts, the authorities decided to suspend the policy of progress and advance and to adopt instead one of conservation.

This period of temporary halt in the work of expansion was utilized for perfecting the internal arrangements of the service. It was on that occasion that by the amendment of the Telegraphic Service Regulations the fee was made uniform throughout the country irrespective of distance, that the system of running the service as a contract work at telegraph offices situated in minor

towns was began, and that the post and telegraph offices were combined.

At the same time the external relation was carried to the state of greater perfection. Japan dispatched a delegate to the meeting of the Universal Telegraph Convention to represent its views about the international service, and in 1884 our country joined the International League for the protection of submarine cables, the rules relating to it being enforced in Japan two years later. About 1890 therefore our telegraphic system both in internal and external relations was completed, so far as the circumstances of the time required.

Meanwhile the state of the economic market had began to recover its normal activity, while the Constitutional régime was inaugurated. The policy of expansion was once more resumed, and several new lines were constructed and a number of new offices were started.

The Japan-China war supplied an unusual occasion for displaying the efficacy of the service. The lines for the use of the Army were specially constructed through the interior of Korea, while watch-towers were constructed at the important places along the coast of Japan, to be connected with the nearest telegraph offices. The new lines were extended to a long length both by land and sea. The termination of the war and the annexation of Formosa to our dominion was signalized by the laying of a cable between it and Japan proper. Then the cable connecting the island and Fuchow was purchased from the Chinese Government. The lines in the interior of Japan proper were also added to a large extent, as the experience during the war had demonstrated that the service was not quite satisfactory and efficient in time of unusual stress. Needless to add that a sudden rise of all business activity subsequent to the war has also been a cause of the expansion of the service.

In 1899 from considerations of an economic and financial nature the rate of fee of domestic service was slightly raised, and in the following year the Telegraph Law and rules pertaining to it were amended.

Statistics of the Service.—The following figures will serve to indicate the main features of the development of this important branch of communication work in Japan :—

Year.	No. of Offices.	Mileage Routes.	Total Mileage of Lines.	No. of Telegrams (*thousand*).
		ri.	*ri.*	
1872	18	160	185	81
1882	185	1,990	5,116	2,979
1892	633	3,557	10,052	5,412
1902	2,202	7,612	33,567	17,605

Telegraph business has undoubtedly been more or less affected since the telephone service was inaugurated with great activity in 1898. The reason why telegraph receipts made an increase in 1899 compared with those of the preceding year in spite of a decrease in the total number of transmissions, was due to the rate of the fee being raised. The decrease both of the number of transmission and amount of receipts in 1901 compared with the corresponding figures in the preceding year was a result of general economic depression.

NUMBER OF TRANSMISSION OF TELEGRAMS AND RECEIPTS AND DISBURSEMENTS.

Fiscal Year.	Telegrams per 100 People.	Receipts.	Disbursements.	Disbursements per 100 *yen* Receipts.
		yen.	*yen.*	*yen.*
1894	19.7	2,185,011	1,196,779	54.8
1895	21.8	2,405,570	1,297,135	53.9
1896	25.6	2,449,188	1,584,575	64.7
1897	32.6	3,107,780	1,995,237	64.2
1898	34.3	3,254,717	2,734,156	84.0
1899	32.2	3,753,011	3,442,211	91.7
1900	36.7	4,307,082	4,007,524	93.0
1901	35.6	4,077,004	4,365,048	107.1
1902	38.2	4,314,673	4,486,059	104.0

II. ORGANIZATION OF THE SERVICE.

Central Office of Control.—At the outset the telegraphic business had neither a special office nor special officers to take care of it, and it was in 1871 when the Public Works Department was established that an office specially devoted to this business was for the first time created under control of that Department.

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The Department of Communications which was established in 1885 was next made to manage the telegraphic service, and this has been the case since that time.

Though the seat of the controlling power in this service thus underwent frequent changes the Government has strictly adhered to the principal set down from the first and has made it as a monopoly of its own. This was a happy arrangement, when it is remembered that owing to some misarrangement at first there are even at present some countries whose governments can not yet succeed to secure the right of monopoly of the service.

Local Offices of Control.—The Department of Communications established at first in the principal places throughout the country offices which were made to supervise the subordinate telegraphic offices respectively placed under them. Subsequently these supervising offices were kept only at places possessing local administrative offices. At present these supervising centres number eighteen in all, and these, subject to the control of the central office, look to the business carried on in their jurisdiction.

Offices of Telegraphic Operations.—The offices that have charge of the technical part of the business, were known by different names in different periods, but since they have been amalgamated with post offices situated in the same districts they have been known by the name of post and telegraph offices, divided into three grades. These offices are of two grades, namely second class and third class.

a. First-Class Offices.—These are the eighteen supervising offices mentioned in the foregoing part of this section, and they are known by the name of First-class Post and Telegraph Offices. Besides attending to matters of ordinary post and telegraph service, they also undertake the work of telegraphic construction. The First-class Office located at Nagasaki is one of special importance, in that it is the terminus for foreign telegrams coming to Japan or wired from Japan.

b. Second-Class Offices.—These number over ninety and are located at so many cities and towns throughout the country. They are principally devoted to dealing with the technical part of the business.

c. THIRD-CLASS OFFICES.—These being located at places of less importance than others possessing either First-class or Second-class Offices, receipts are often found to fall below disbursements, so that there is not much room, if indeed any at all, for improving the service out of the profits of the offices. In view of this consideration, the special arrngement is made with regard to their organization, and they are generally run as contract work. The chief of an office of this grade draws no regular salary but simply gets a certain amount of allowance. Appointed by the Minister of Communications according to the prescribed rules of appointment, the chief gets from the Government a certain amount of money with which to work and manage his office. Besides, he is under obligation to supply an office at his own expence. The offices of this lower grade number about 4,000 throughout the country, and one-third of them undertake to attend to the telegraphic service.

SUBSIDIARY ORGANS.—Subsidiary organs exist in the shape of telegraphic agencies one kind of which being run either as private or Government enterprise. The private enterprise is generally supplied by railway companies which maintain the telegraphic service at their stations. As a result of certain arrangement these special telegraph offices offer their service to the general public, and for this service they get from the Government a sum of money equal in amount to not less than one-third of the fee they receive from applicants, the rate of fee being equal to that enforced at Government offices. The agencies mantained by the Government are found in places not yet possessing regular telegraph offices. Lastly, there is another kind of agency of a lower grade, which simply receives messages for transmission from people to forward them to the nearest telegraph office. These agencies, also conducted as contract work, are maintained in the principal parts of a large city.

TELEGRAPH OFFICES ABROAD.— Besides all those offices maintained in the interior the Government also possesses a telegraph office at Fusan, Seoul, and Jinsen, all in Korea.

Such is, in short, the organization of our telegraphic service,

and though a large number are being newly established every year, still on account of a greater expence than in the case of post office, the total number does not come up to that of the other kind of offices. Nontheless the telegraph offices of all grades total about 2,200 throughout the country. In more thickly populated districts of Japan proper, that is in Kyūshu and Shikoku the offices are at the rate of one per 9 square *ri* approximately. It is to be conceivable that with the work advancing at the present rate, all the post offices in Japan will be connected before long with telegraph lines.

III. FOREIGN TELEGRAPH.

General Remarks.—It was in 1879 that Japan joined the International Telegraph Convention. Previous to this whenever an International Telegraph Conference was held abroad, our Government had sent in accordance with the advice of the Ministers of Holland, Austria, Denmark and others, a delegate to attend the meetings, to listen to the debates and make investigations. At this time our Government did not yet see the necessity of joining the Convention, but it agreed to become a member in the said year through the intermediary of the Russian Government by which time our telelgraph department had made considerable progress. Japan dispatched a delegate whenever an international conference of this service was afterward held, and not unfrequently Japan offered various suggestions on occasions of such conferences. The position of Japan in the International Convention suddenly underwent a great change after the Japan-China war, for after that Japan's share in the central maintenance fund that had been previously one of the fourth class rate was raised all at once to one of first class. In 1884 Japan joined the International Convention for the Protection of Submarine Cables.

The foreign telegraph service in Japan was commenced in 1871 when the Great Northern Telegraph Company laid cables between Nagasaki, Shanghai and Vladivostock. After the completion of a telegraph line between Tokyo and Nagasaki two years after, the

Japanese telegraph offices accepted foreign telegrams, but, as our country had not yet joined the International Telegraph Convention at that time it could have no direct communication with foreign countries; the transmission of messages was limited therefore by the boundaries of the Empire; all communications beyond Nagasaki being entrusted to the Great Northern Telegraph Company.

In 1883, an agreement was entered into between our Government and the Government of Korea for laying the Japan-Korea cable, and the work of laying it was undertaken by the Great Northern Telegraph Company. The cable was opened for service in February of the following year.

Korea subsequently constructed lines in its interior and, joining them with the Japanese telegraph offices, entered into connection with the service of the rest of the world. However as that country had not yet joined the International Telegraph Convention and was not acquainted with the particulars about foreign telegraph service, Japan had to bear the responsibility for the foreign telegrams coming from or destined for that country.

Japan next approached the Great Northern Telegraph Company and induced it to add new cables connecting Nagasaki with Shanghai on one hand and with Vladivostock on the other. Amidst all these active expansion enterprises of Japan one thing that had always been regarded with regret by the Government was the fact that the cable laid between our two outlaying islands of Tsushima and Iki belonged to the said Telegraph Company. The charge imposed on this particular section was far higher than that prevailing in the rest of Japan. This itself was highly inconvenient as it indeed interfered with the uniform rate system adopted by our Government, and even affected Japan's autonomy in its own telegraphic administration. After repeated conferences with the company, at last in 1871 the cable became Japanese property. Thus the telegraphic administration over all the Japanese dominions, as they then existed, was brought under the sole control of the Government, and its autonomy in this respect was now for the first time complete.

In 1898 the Government purchased from the Chinese Govern-

ment the cable laid between Formosa and Fuchow, and this line was made to attend to foreign telegrams. It will thus be seen that though situated in a remote corner of the Far East, Japan began to be connected with the Asiatic continent by four different cables, that is with those reaching Vladivostock, Shanghai, Fusan and Fuchow.

With the opening of the Vancouver-Queensland cable on December 8th, 1902, and then of the San Francisco-Manila cable the transmission of telegrams between Japan and Europe and America is no longer necessarily wired *via* Europe but is able to take a cheaper and perhaps quicker service *via* either Australia and the Pacific or Manila. When a Pacific cable directly connecting Japan and North America is laid, as is proposed, Japan will occupy a central position linking together the two hemispheres, and her situation as a medium of communication for the world's trade will have nothing to desire for further.

The foreign telegram service in Japan being regulated identically as in all the countries on the list of the International Convention, it would be superflous to make any further reference to this subject.

The activity of foreign telegraph service in Japan has advanced with great strides. About 1873 the number of this kind of telegrams dealt with in Japan did not exceed 1,000 a year. In 1883 the number became 23,000: in 1893 to 100,000; and in 1902 to 600,000. This growth of our foreign telegraph service is an index to the development of our national prosperity and trade.

The foreign telegrams dispatched by Japan are transmitted along two main routes, one going to Vladivostock and the other to Shanghai, the former called the northern and the latter the eastern line. The Japan-Europe-American service, that is the eastern line, is triforked at Hongkong, the three lines being the Shanghai-Honkong-Madras line, Shanghai-Hongkong-Australia-Pacific line, and Shanghai-Hongkong-Manila line. An applicant may select at will which of the three the telegram sent in by him should take. The time occupied in transmission is five or six hours at the earlist and 24 hours at the outmost.

IV. TELEGRAPHIC LINES CONSTRUCTION.

Legislative Measures Relating to the Construction.—In the early part of the work of telegraphic construction ordinary roads or railway tracks were generally used in the construction of the lines, and the use of privately owned land was avoided so far as circumstances permitted. Therefore in those days no special rules about this work were in force, and it was in 1874 that a regular arrangement was made as to compensation in case private land was requisitioned for telegraph work, for by that time the necessity of using private land had become unavoidable with the expansion of the business. Similarly, coming to 1884, a regular arrangement was drawn up as to the disbursement of necessary expenses when the location of a telegraph line was to be removed in compliance with the request of private individuals. The requisition of private land that had formerly been settled by usage was embodied in a regular enactment in 1889. The law in question provided rules about the requisition, but this measure involved another enactment in the following year, the Telegraph and Telephone Lines Construction Regulations. The fact was the enforcement of the law of requisition was attended now and then by no small inconvenience when the owner of a land over which the wire had to pass wished to undertake some architectural work upon it. These regulations continue in force to this day.

Progress of the Work.—The telegraph lines were constructed as already described above, between Tokyo and Yokohama and Ōsaka and Kobe about 1869. But this work was, strictly considered, merely experimental. It was in the construction of the Tokyo-Nagasaki and Tokyo-Aomori lines that the work was first begun in a regular way. The construction of the two lines was completed between 1871 and 1874, next the work of extending the Tokyo-Aomori line to Hokkaidō across the Strait of Tsugaru, was started. The Great Northern Telegraph Company was made to undertake the work. The route, together with the Hakodate-Sapporo line, was to form part of the trunk route of Japan, and it is along this route that all the First-class Offices are situated to-day. The extension

of the lines through the districts in Kyūshu occurred between 1874 and 1877, the construction of a circuit round Shikoku was in 1876-1879 and the connection of San-in, Hokuriku and Uzen and Ugo districts with the rest of country took place in 1876-1882. Then between 1884 and 1892 a line was constructed round the island of Hokkaidō.

Existing Lines in Operation.—At the end of 1901 the total lines in operation on land were at the rate of 2.67 *ri* per 10 square *ri*, the exact figures of the land and submarine lines being as follows :—

	Length of the Lines.	Lines in Operation.
Lines on Land	6,608 *ri.*	32,267 *ri.*
Submarine Lines	2,130 miles.	2,758 miles.

Underground Lines.—Thus far Japan had not possessed any underground lines, but in such thickly populated cities as Tokyo and Ōsaka the construction of this kind of lines has become necessary, especially in Tokyo. The lines diverging from the central office in Tokyo to all the parts of Japan number more than 170, and they branch off to their respective destinations at point only a short way off from the office, and in the streets where traffic is most active and houses are built closely together. The existence of electric light wires and telephone wires makes the matter still worse. This is regarded as highly inconvenient, and the matter will be far from mended if the telegraph and other lines are additionally constructed according to the aereal method. The work of preservation alone would not be an easy task. Indeed there are hardly rooms left even at present to admit the further construction of new lines. Consequently it was decided to convert at least a part of the aereal lines in underground system and in 1902 this work was started for a portion of the Central Office and Shinagawa section, which forms the first station of the Tōkaidō telegraph route. The work is still going on.

Service of Foreign Experts.—From 1869 when the line was first constructed between Tokyo and Yokohama the work of constuction was carried on till 1877 under the supervision of foreign experts with Japanese assistants under them. These assistants obtained in course

of time sufficient knowledge to undertake the work on their own responsibility. At the same time the graduates of the course of electric engineering increased in number, and they were able after a time to take charge of the work without the help of foreign experts.

Japanese Experts no longer Needing Foreign Help.—As a natural result of this advance of Japanese technical and scientific knowledge of electricity, the service of the foreign experts was dispensed with from about 1880. However Japan was still obliged to depend upon the service of foreigners in the work of laying cables, and it was by them that the Hakodate-Aomori cable and the Shikoku cable were constructed. In course of time the Japanese experts became fully qualified for the work, and the laying of additional cables at the Strait of Tsugaru and Shikoku was done by them, as also the work at Gotō, in Hizen.

The Formosa-Ōsumi.—By far the most important work accomplished by them was the laying of cables between Ōsumi and Formosa, and indeed this latter feat deserves special mention in the history of our telegraph business, as it stands a permanent proof of the advance of telegraphic engineering in Japan. The work was planned by the War Office, as it was one of special importance in connection with the maintenance and exploitation of the new territory of Formosa. In 1895 soundings were carried out, and next year the cable steamer *Okinawa Maru* which had been ordered into a dockyard at Glasgow, arrived. The work was launched in July of the same year, and by September of that year the laying was finished for the Ohama-Oshima and Oshima-Okinawa trunk lines and the Ohama-Tanegashima and Tanegashima-Yakujima branch lines. Owing to the unfavorable condition of the sea work was suspended, to be resumed in April of the following year. At last on May 30th of the same year the Ōsumi-Formosa cable was completed.

The trunk line measures 870 nautical miles in length making with the branches altogether 1,045.3 miles. The trunk line consists of two circuits, one being the Ohama-Naha section and the other the Naha-Kelung circuit. It starts at Ohama, Ōsumi province, and reaches Okinawa *via* Oshima. Then it reaches *via*

Yayeyama the place called Hasshakumon, Formosa, being separated by a little over one *ri* from Kelung. This trunk line contains more or less land lines constructed on various island lying on the route.

V. TELEGRAPHIC APPARATUS AND MATERIALS.

A descriptions will be next given of the apparatus and materials used in our telegraph service.

WIRES.—At first No. 8 iron wires were exclusively used, except in place where a special sort of wires was required, but to economize the cost of construction No. 11 iron wires were adopted. For several years afterwards this grade of wire as exclusively used in preference to others. They are no longer used now, except in constructing street lines and other short lines. Evidence confirming this fact was obtained quite accidentally in 1890 when for testing the telegraph and telephone composite system and long distance telephone service two lines of No. 12 hard copper wires were constructed between Tokyo and Ōsaka. It happened just at that time that the telegraph business between the two cities was unusually busy, so that the two lines just constructed at that time for another object were temporary utilized for the ordinary telegraph service. The result obtained emphatically demonstrated that the copper wires possessed better power of transmission than the No. 8 iron wires. The rate of speed did not differ much when instruments worked by hand were used, but with automatic instruments the copper wires showed about double speed. The experiments carried out in Ōsaka in 1891 proved that whereas 1,076 *letters* could be obtained per minute when the copper wires were used the corresponding number for the iron wires was only 491.

In cities possessing a large number of electric wires aerial rubber cables or lead covered paper aerial cables are used instead of ordinary bare aerial wires, or otherwise, for owing to the crowding of telephone and electric light wires, the use of ordinary wires is judged risky for the efficiency of the service.

TELEGRAPH POLES.—*Sugi* (Cryptomeria japonica) *Hinoki*

(Chamæcyparis obutosa.) and other kind of trees are not available for the posts until after they have grown 30 to 40 years. The period of preservation does not exceed six or seven years in ordinary circumstances. Here comes in the necessity of providing some devises for prolonging that period. At first Japan adopted for this purpose the charring and tarring methods, but after the experience of several years they were found to be not quite satisfactory, so that they were discontinued in 1879. A tarred post could be preserved for only seven or eight years. An injection of copper sulphate was next adopted, a method in 1871 by a French expert, and now known as Boucherizing treatment. This method was first tried in 1879 when the Tokyo-Kofu line was constructed. In the following year the central authorities ordered the electric engineers to adopt this method. Besides copper sulphate treatment that with carbolium, creosote aud other chemical compounds is being experimented upon.

As to the exact period of the preservation of Boucherized poles, it is not possible to give a final verdict, the experiments not yet being concluded. So far as the result thus far obtained goes, this treatment seems to be far better than the other methods previously used, for in ground of a proper nature the poles thus treated appear to last 15 to 16 years, that is to say, twice the period of non-injected poles.

Insulators.—At first foreign-made insulators commonly called the earthenware insulators were used. These, however, were found to be inferior in quality and not quite satisfactory for preventing leakage, not to speak of their being rather costly. The consequence was that the authorities gave orders to the potters of Arita, Imari, Seto, etc. to make insulators. They succeeded in making one of good quality and cheap in price, so that from about 1875 the home-made insulators began to be used in place of the imported articles, and at present these are exclusively used. This may be regarded as the first step in the improvement of the insulator service.

These insulators were generally of single cap insulator but as this kind of insulator was discovered to be unsuited for a long circuit service, in 1883 double cap insulators were used for the Tokyo-Nagasaki circuit. The result was highly satisfactory, the

the leakage and the danger of mixing being considerably minimized. The single-insulators have gradually been superseded by the double, and this change marks the second stage in the improvement of the insulator-service. It may be noted that so far as the experiments made in Japan go the ratio of breakage of double-insulators has been ascertained to be 2.6 per cent. against 3.9 of the other.

For packing the bolt to the cap of the insulators a mixture of sulphur and brimstone has heretofore been made use of but this is not entirely satisfactory, so that experiments are now carried on with the object of discovering a better composition.

Apparatus.—The apparatus first used for the Tokyo-Yokohama line was the Bregnet needle machines, ordered abroad in 1869 with all the other apparatus and materials required in the work. Two years later it was decided to adopt the Simens and Morse apparatus, the machines and other necessary accessories being ordered from England. These apparatus are yet to be seen in many parts of the country. In 1873 a workshop for making telegraphic apparatus was first established, the work being carried on under the direction of a foreign expert. It mainly consisted in making repairs. For the first time in 1878 Japan manufactured Morse instruments herself, ten sets in all. They were entirely manufactured by hand, as the complete set of machinery required in the work had not been provided at the workshop. Later on the knowledge of making the Morse and other apparatus has made so much advance that at present Japan supplies almost all the home demand for the instrument and its accessories. In 1880 a wire-shop was established and the wires used in the service were manufactured. This business was transferred to a private concern in 1887. At present the manufacture of copper wires is carried on extensively in Japan, but in iron-wire work we have not been so successful, and in fact for the supply of this particular kind of wires Japan has to depend even now on the help of foreign countries.

The history of the work of telegraph machine-making in Japan from the inception of the service, may be divided into three stages, the period of training and apprenticeship, extending from 1873 to about 1880; the period of imitation extending to about 1887, and the last period which came next may be regarded as the period of

improvement and of original work. Improvements and original work began to be most *en evidence* in 1896.

Duplex telegraphy.—The duplex system was first used in 1880 for the Yokohama-Kobe line, and it was also adopted for other lines constructed later on. After the introduction of the use of the double current key and retardation-coil in 1893 the duplex method began to be worked with special success. All of these apparatus in use were manufactured at home, with only a few exceptions.

Automatic recorder.—Wheatstone's automatic recorder was first introduced in 1882, and was used in the Tokyo-Ōsaka service, and its practical utility was confirmed with special effect in 1889. The machine used at that time was purchased from England, as that imported seven years before was also brought from that country; but in some details of construction the former had been much improved. With that recorder it was found possible to receive 400 words per minute, the current used being one of 25 mili-Ampier. This recorder is still used in almost all the parts of the country. About that time the shunted condenser were first experimentally used for automatic machines. Coming to 1891 the automatic machine was put up both at Ōsaka and at Shimonoseki, and the transmission was undertaken for the first time according to the duplex automatic system. It was at that time that the retardation coil was first used for duplex telegraphy.

Receiver.—At first the Morse ink-writer was universally used for transmitting or receiving the messages, but as a result of the experiment carried out in 1887 telephone apparatus was substituted for the Morse ink-writer. This contrivance is generally used at present at all the offices which have not to deal with many messages. The apparatus now used for the purpose is one of Delville or Solid-back type.

The Morse ink-writer being attended in its use by some defects, in 1894 the sounder machine was first used instead of it in Tokyo, and this apparatus is now used extensively in Japan.

Reflecting Galvanometer.—When the work of laying a cable between Ōsumi and Formosa had been completed the reflecting galvanometer adapted for a submarine cable was adopted, but in 1899 it was superseded at the three offices of Ohama, Naha and

Kelung by Muirhead's syphon recorder, so that a complete duplex system was commenced between the three offices in question. In the intermediary stations of Kuji and Yayeyama the reflecting apparatus is still in use as the operation there is limited to certain hours in the day, and the business therefore is not brisk.

Automatic Repeater.—The automatic repeater contrivance was first adopted at Kobe, but it was of the ordinary Morse system, and the speed was very slow. The adoption in 1893 at Aomori of the latest repeater board as a substitute of the old system, marked an advance in repeater operations. The double current automatic duplex repeater was next adopted at that place, while owing to the greater activity of the business and the construction of new lines, with the greater need of automatic repeaters, in 1897 a high speed simplex and duplex repeater, simplex repeater and double current duplex and simplex repeaters were adopted for the Tokyo-Sapporo circuit. In the following years the latter was adopted for several other lines. Then coming to 1900 the Hakodate-Nemuro, Tokyo-Ohama and Sakata-Hakodate lines got repeaters of double current single system; in 1901 the Tokyo-Otaru line obtained a high-grade repeater. In that year automatic telegraphy instruments and repeater apparatus were distributed among the principal telegraph offices, to be used as reserves. The quadruplex automatic repeater is now being experimented with.

Double current key system.—In 1882 when trouble occurred between Japan and Korea the double current key system was first used between Tokyo and Nagasaki, in order to expedite the transmission of messages the number of which had suddenly increased. Up to 1894 or 1895 the contrivance was not in much demand, owing to the fact that lines of long circuit operation were not many. The condition of things has undergone a marked change since that time, and with a large increase in the number of long circuit lines the double current key has began to be in greater demand than before.

Quadruplex apparatus.—In 1890 a number of quadruplex telegraph apparatus were purchased both from England and America, and two years later the quadruplex system was first used for the copper wires of the Tokyo-Ōsaka lines. In the following

year this instrument was also adopted for the Tokyo-Sendai and the Ōsaka-Shimonoseki lines, and its use has therefore become quite extensive. What is to be noted about it is that these intruments are now being made in Japan, and that the originals were even improved upon somewhat.

In 1891 a contrivance for facilitating the superintendence of the operations was adopted and this testing machine which, by the way, has been manufactured at home was set up at Tokyo and Ōsaka in 1899. This example will be followed in the other principal offices.

Synchronic Signaller.—The synchronic signal of noon that had been carried on by hand-worked switch began to be conducted by an automatic time switch made in Japan. The subsequent appearance of the double current signal system required the improvement of the instrument, so that coming to 1899 the double current auto matic time switch was devised and manufactured, and operated with excellent result at the three offices of Tokyo, Nagoya and Ōsaka. The instrument has been distributed among all the other principal places, and this mid-day signal is now working quite satisfactory.

Wireless Telegraphy.—Wireless telegraphy was first investigated in 1886 and in June of that year it was experimented upon with success along the upper banks of the river Sumida over a distance of 120 yards and at the coast of Tsukiji at a distance of 80 yards. Coming to 1898 the wireless telegraphy with electric waves was experimented in the Bay of Tokyo, and then in the following year between Tsukiji and Shinagawa fort, a distance of 3 nautical miles. The result was satisfactory in both cases. Further on in 1900 a similar experiment was carried out in the same bay and between Yawata, Kazusa province, and Funabashi, Shimōsa province, the two places being 11 miles apart. This and the experiment carried on between Funabashi, mentioned above, and Otsu, Sagami province, a distance of 34 miles, were similarly successful. Similar experiments since undertaken have been attended by satisfactory results, so that arrangements are now being made to carry out experiments on a larger scale and over longer distance. The cable steamer *Okinawa Maru* is about to be fitted with the instrument.

Battery.—The common battery system being more economical than the ordinary one, it is now taking the place of the battery.

Since 1902, 420 chrolide accumulators have been used with excellent results in place of the 6,645 Daniel batteries that had been previously in use. This new arrangement will be extended to all other offices where a large number of the Daniel's is used.

CHAPTER V.—Telephone Service.

Introductory—Technical Matters.

I. INTRODUCTORY.

General Remarks.—Telephons were first used in this country in 1877, and they were principally short distance telephones. However after the experiment carried out with success in 1888 between Tokyo and Atami, telephones began to become largely used as public means of communication. The scope of the operations was next extended as far as Shizuoka, and then to Osaka, and with success in both cases. At first there was talk of leaving the telephone business to private enterprise, but this idea was given up and it was decided that the business should be undertaken by the Government as part of the telegraph enterprise. The working principle being settled in that way, the Government at once proceeded to carry the business into effect. In December 1890 the service was opened in Tokyo and in Yokohama and also between the two places.

Experiments.

The Service Opened.

The people did not appreciate at first the benefits of the service and the number of subscribers was therefore extremely limited in the two cities. This state of affairs lasted for only a short while, comparatively speaking, and in 1893 when the service was opened in Osaka and in Kobe and between these towns, the number of applications for subscription reached a considerable number. Gradually the value of the service began to be appreciated, so that by 1895, owing to limit of accommodation applicants who could not yet get telephone connection numbered more than 4,000. Meanwhile petitions arrived at the central authorities from many cities in the provinces requesting that a telephone service should be opened in

Growing Demand on the Service.

their districts. In consideration of this and other matters of a like nature, the Government made up its mind to largely expand the scope of the business. Accordingly it drew up, with the consent of the Diet, a programme to devote during the seven years ending the 1902 fiscal year a sum of over 12,800,000 *yen* to the work of expanding the scope of the business. The programme contemplated the establishment of the business in Kyoto, Nagoya, Nagasaki, Shimonoseki, Sapporo, Hakodate, Sendai, Kumamoto, etc., to extend limit of the business already carried on in other cities, and finally to bring all those cities into telephone connection with each other. Acting upon that plan, in 1899 the long distance service was opened between Tokyo, Yokohama, Osaka, Kyoto, and other cities, and the scope of the business in those cities was also enlarged.

As already mentioned all matters relating to telephones were at first regulated according to the provisions of the Telegraph Service Regulations, but in the Telegraph Law enacted in 1900 special provisions relating to telephone were distinctly set forth. Then the Telephone Exchange Rules that were drawn up on the occasion of the commencement of the service, were also thoroughly recast in 1897.

Data of the Service.—About thirteen years have elapsed since the service was inaugurated in Japan, and the record of progress during that interval of time has been something remarkable, as shown in the following description.

Number of Telephone Offices. At the end of 1890 there were only two telephone exchange offices and 16 telephone call offices; these figures grew at the end of 1895 to 4 and 24 respectively, to 27 and 151 respectively together with 134 automatic telephone at the end of 1902.

Number of Subscribers. At the end of 1890 the subscribers numbered only 343; advanced to 2,858 at the end of 1895, and further to 29,941 at the end of 1902.

Ratio of Subscribers per 10,000 People. At the end of 1890 the ratio of subscribers per 10,000 peoples was only two, to be increased to 14 five years aftar, and lastly to 60 at the end of 1902.

Number of Non-connected Subscribers.

The number of applicants for connection being beyond the scope of the provisions, there are quite a large number of non-connected subscribers. At the end of 1895 these non-connected subscribers numbered over 4,000, and the number rose to no less than 23,300 approximately at the end of 1902.

Length of Telephone Routes and Lines in Operation.

At the end of 1890 the telephone circuits totalled 50 *ri* with the lines in operation extending to 331 *ri*; to rise to 178 *ri* and 2,156 *ri* respectively, five years later, and to be further advanced by 1902 to 1,039 *ri* and 43,345 *ri* respectively.

Telephone Receipts and Disbursements.

The progress of the financial side of the business was quite commensurate with that of the technical side. In the year of inception ordinary receipts fell short of disbursements by over 2,300 *yen*. This was the only case of financial failure, for subsequently the balance was always on the side of excess of receipts. This excess amounted to about 7,900 *yen* in 1891, grew to about 50,800 *yen* in 1895, and lastly to 984,600 *yen* approximately in 1902.

The following table will give a complete survey of the financial progress of the business from the 1892 fiscal year :—

TELEPHONE RECEIPTS AND DISBURSEMENTS.

Fiscal year.	Receipts.	Disbursements.	Balance in Favor of Receipts.
	yen.	*yen.*	*yen.*
1892	48,069	32,722	15,347
1893	94,959	52,849	42,110
1894	132,967	75,229	57,738
1895	142,431	91,549	50,882
1896	150,444	113,605	36,839
1897	228,505	179,612	48,893
1898	574,332	324,038	250,294
1899	1,035,957	630,474	405,483
1900	1,513,912	964,900	549,012
1901	1,810,411	1,175,982	634,429
1902	2,263,626	1,278,991	984,635

II. TECHNICAL MATTERS.

A. Street Telephone Lines.

Aerial bare wires.—When the service was first opened in 1890, owing to the small number of applicants the work was on the overhead wire system, B. W. G. No. 18 hard copper wires being used. From about 1892 No. 17 hard copper wires were exclusively adopted, though in such places as Hokkaidō and the north-eastern districts of Honshū which are liable to snowstorms No. 14 zinc coated iron wires had to be used. Then in Tokyo also No. 17 wires were found liable to injury from storms, so that since 1898 No. 17 silicated copper wires have been used.

Aerial Cables.—From about 1891 overhead rubber cables were adopted for places traversed by many electric wires, while with the advent of the telephone service expansion programme in 1890 the underground cable system was adopted for Tokyo, Ōsaka, Yokohama, Kobe, Kyoto and Nagoya. This underground portion was, however, to be confined to trunk lines, the rest to be made with lead-covered paper cables. For other telephone offices overhead cables of the same kind are to be employed, though rubber cables are used when the wires are stretched across the street and in places where only a short distance has to be traversed. The cables are generally of two kinds, one containing 100 centres and the other 50. On rare occasions one with 26 centres is used.

Underground Wires.—Underground wires have, as mentioned above, been laid in Tokyo, Ōsaka, Yokohama, Kobe, Kyoto, and Nagoya since 1896, the length of these wires extending with the lapse of year. For conduits iron pipes alone were at first used, but later on earthenware pipes have been adopted at the same time, one or the other to be used according to the requirement and circumstances of the locality. The iron pipes are imported, but one kind of the two earthenware pipes in use is made at home, the other imported from America. Those coming from America are MacRroy conduits, and these are exclusively used in Nagoya and some times in Tokyo to some exent.

The underground cables of lead-covered kind.—They

contained at first 200 centres, afterward they were increased to 300 and lately to 400.

Circuit.—At first the single wire system was adopted but from 1895 it has been superseded by the metallic system, so that at the present time all connections consist of the double.

Poles.—Both in the urban and suburban districts *Sugi* timbers are used for poles, though iron poles are used for the junction of cables and naked wires. The timber poles are either Boucheringed, or are coated with an anti-putrefaction preparation.

Arms.—Arms are made of *Keyaki* wood for a pole supporting not more than eight wires, but when the number is more than 12 an iron arm is used.

B. Suburban Telephone Wires.

Routes.—The lines are all of naked aerial wires especially constructed for the telephone service, though the lines that are not of much importance may be constructed in the spare rooms of the existing telegraph poles. Sometimes the existing telegraph wires are used, so that they are made to fulfill the service both of the telegraph and the telephone business.

Circuit.—It is entirely on the metallic system. In a circuit of short distance the multiple system is used, while in another that is operated comparatively little, four offices are connected by one circuit. Then telephone and telegraph service is sometimes made interchangeable as to the utilization of each other's circuit, the telephone wires doing service for telegraph wires in some cases and the telegraph wires returning the service for telephone in other cases. In the former the Cahilo's system or Schiwnsky system is used while the composite system of the American Long Distance Telephone Company is adopted in the latter.

Wires.—Hard copper wires are generally used, the size being B. W. G. No. 8 or No. 12 or No. 14 according to the distance of a given line. For a line of short distance or for a circuit of not much importance, zinc coated No. 8 or No. 11 iron wires are sometimes used, while bimetallic wires or steel wires are used where, as in the case of crossing a river, the distance between the poles is comparatively long. In the strait separating Moji and Shimonoseki

8-centred steel wires insulated by gutter-percha, that is to say, two lines of 4 circuit submarine telephone wires, are used.

C. Apparatus at the Subscribers' Houses and at Telephone Call Offices.

Apparatus.—It was in 1877, that is to say, the very next year after Prof. Alexander Graham Bell's invention of workable apparatus was made public that the instrument was first introduced into Japan. Afterward the Edison, Blake, Belton and Ader types arrived. The Gower apparatus that arrived in Japan about 1887 having been judged to be well suited for the purpose, the receivers of this type were adopted for use of subscribers when in 1890 the exchange offices were first established in Tokyo and Yokohama. The battery used for transmitter and receiver was of the primary battery type. From 1895 a magnetic-motor was also used. In the same year, in consequence of the expansion of the city telephone business and also of the construction of long disatnce telephone, it was decided to replace the Gower apparatus by either the Solid-back or Derville type, the former being judged to be not quite satifactory for working a long-distance service. At present the subscribers get either the Solid-back or the Derville, while the latter is exclusively used either in a city or on a short-distance service. Desk-telephones also use the Solid-back.

At all telephone offices also the Solid-back is a rule, as also is the case of the automatic call offices established recently in cities or in places situated close to cities.

Arresters.—Formerly the Hibberd Fuze apparatus was used, but of late it has been superseded by the No. 12 arrester made by the Western Electric Company, as the latter is more securely provided against the danger of strong currents and of thunder.

Batteries.—At the time the Gower apparatus was used the Daniel was used both for local and signal circuit, but with the disuse of the Gower the Leclanche was adopted, though in place of the Solid-back the Fuller battery was adopted.

D. Apparatus at Telephone Exchange Offices.

Exchange Apparatus.—At the time of the commencement of

the service the standard switch board made by the Western Electric Company was adopted, and with an increase of the number of subscribers the apparatus at the exchange offices in Tokyo and Ōsaka was substituted in 1893 with the serries multiple switch board manufactured by the same company. At the same time the Mann's instrument was set up at the Kobe Office. In 1895 the expanison of the business led to the offices in Tokyo, Ōsaka, Yokohama and Kobe adopting a still more perfect type, this time the parallel switch board with self-restoring drop also by the same company. This is the type now in use at all the principle exchange offices throughout the country. The authorities are thinking of setting up in the course of this year the lamp signal switch board at the Shitaya Branch Office in Tokyo and of installing the common battery system board at the office in Kyoto. It may be noted that the standard board makes 100 connections; the serries multiple switch board 240, the parallel multiple switch board 300 to 450; and the universal battery composite type 630.

The operator's transmitter was at first the Blake type; then the Berthon and Ericsson were used, but at present they have all been disused in favor of the Solid-back.

Toll Board.—At first for the Tokyo-Yokohama and Osaka-Kobe service the standard switch board was used as also in the case of city service, but when that board was superseded shortly after by the parallel switch board type, the toll board combining calculagraph to designate the conclusion of a conversation was installed.

Chief Orerator's board, arresters and Testing Set.—With the adoption of the parallel testing set switch board the operator's board for supervising the work of the operation began to be set in operation. For the testing service at first the set board provided with a mica lightning rod was used, while the paraffin wire was used for cross and premise lines. With the adoption of the parallel multiple switch board No. 4 main distributing boards and the intermediate distributing boards made by the Western Electric Company were adopted. For small exchange offices a handy testing distributing board and with No. 4 A-type arresters and Fuze boards were adopted.

Power Plant.—In exchange offices where the parallel switch

boards are in operation the power plant is necessary. At the offices in Tokyo and Yokohama the gas motor supplemented by electric motor is in use, while in Ōsaka, Kobe, Nagasaki and Kyoto electric motor supplemented by kerosene motor is in operation. For the battery the chloride accumulator is used, though at Yokohame and Kobe the Hagen accumulator is used at the same time. The machine made by the Crocker Wheeler Company is used for the purpose of replenishing the current and of giving signals.

At exchange offices where either serries multiple switch boards or standard switch boards are adopted the monochromic accumulator is used, while for transmission and signalling the role-changer is used.

CHAPTER VI.—The Personnel.

How the Staff is Recruited

Post and Telegraph School.—For the purpose of training those who have to attend to the management and operation of post and telegraph affairs the Government maintains the Post and Telegraph School. This institution was established in 1869, when a number of the Shubunkan School in Kanagawa-ken were selected to receive instruction in the technical part of the business under Mr. Gilbert, an Englishman. As the machine in vogue at that time was of the letter indicating type, and therefore very simple in operation the students easily mastered the principles of the system. The introduction of far more complicated Morse invention was followed by the establishment of a special course of training, so that a school-room was opened for that purpose in the premises of the Department of Public Works. In 1873 this was enlarged and made into a regular school, the main school being in Tokyo and a branch school in Ōsaka. The branch school was once abolished, then restored and finally given up, but the head school was expanded in scope under the new name of the Tokyo Telegraph School and made to teach, besides the technical knowledge of communication, the knowledge of electric machines, batteries, wires, etc. as also a practical knowledge of construction. In 1890 a course of post affairs was created in the school to train students qualified to take charge of post service. Two years later the standing of candidates for admission was determined to be equal to that of the graduates of ordinary middle schools. In 1899 the courses were again changed, into those of management and those of technical operation. In the former the students who were to attend to the duty of managing post and telegraph business were taught while in the other the students were taught the science and practice of telegraphy and telephone. The standing of the courses was at the same time elevated. The course of study extends for two years for

both courses, and the graduates are under obligation to give their services to the Department of Communications for five years dating from the period of graduation. With the revision of the courses in 1899 a special course giving special technical teaching on all matters connected with electric communication was created, the students being selected from among these who were attending to the business of electric communication in the Department. The course of study is one year and the term of obligatory service five years.

The graduates trained by the Department since the establishment of the special class-room in 1871 numbered, up to March 31, 1903, 36 in the course of management, 1,888 in the course of technical department, and 131 in the special course, in all 2,255.

TRANSPORTATION.

CHAPTER I.—Railroads.

Official Organization—Legislative Measures—Railroad Lines—Rolling Stock—Capital—Volume of Traffic—Receipts and Disbursements.

I. OFFICIAL ORGANIZATION.

General Remarks.—It was in November of 1869 that the Government decided to start the work of railroad construction, and caused the then existing Department of Civil Affairs and of Finance to conduct the business. In March of the following year the Department appointed railroad officials, and these on the splitting up of this dual Department into two independent offices, were transferred to the Department of Civil Affairs. Again the control of railroad matter passed into the hands of the Department of Public Works when this was created in October of the same year. The Department established a special Bureau to attend to this business, but the Department was abolished in December of 85 and the Railroad Bureau was placed under the direct management of the Cabinet. At the same time it was affliated to the Home Office. This connection with the Home Office came to an end in July of 1892 when the Department of Communications was created, and naturally the Railroad Bureau. This occurred in November, 1893, was brought under the control of the new Department. With the progress of the times railroad business had grown so expanded in scope, that it was decided to divide the controlling office into two bureaux. This division was carried out in August of 1897. One bureau was made to attend to the work of supervision and the other bureau to traffic and construction. The new

office was called the Railroad and Construction Bureau, and this division of labor is still continued to this day.

Prior to this, in April of 1896 a new Department of State for Colonial Affairs having been created, the railroads in Hokkaidō were detached from the control of the Communication Department and were transferred to that of the new Department, but as this office was abolished in September of the following year the Hokkaidō railroad business was again restored to the Department of Communications.

II. LEGISLATIVE MEASURES.

General Remarks.—The first legislative measure relating to railroad was published in February of 1872 to provide general rules about railroad work. It was amended soon after. About the same time, Punitive Rules relating to Railroad were promulgated. In September of that year Supplementary Rules relating to Conveyance of Goods on Railroads and also the freight tariff were determined and made public. In January of 1874 it was proclaimed that in future any change of the tariff of railroad passengers and goods would be determined at the discretion of the Department of Public Affairs. In pursuance of that announcement, in November of that year rules relating to luggage were enacted. It was announced in October of 1879 that cases in the Punitive Rules relating to Railroads that clashed with a provision in the Criminal Code would be determined according to Art. 5 of the Code.

Then in July of 1883 it was enacted that the General Rules relating to Railroads and the Punitive Rules thereof would apply correspondingly to private railroads. Rules relating to the Conveyance of Explosives on Railroads and to the treatment thereof were made public in April of 1885 in the form of Notification No. 14 of the Department of Public Works. The Regulations relating to the Finances of Railroads were provided that year. But a legislative measure of far greater importance was the promulgation in May of 1887 of the Regulations of Private Railroads and in June of 1892 oft he Law of Railroad Construction prescribing the route along

which Government railroads were to be laid. In that year also was elaborated the organization of the Railroad Council. The Law relating to Railroad Construction in Hokkaidō was issued in 1896, and in March of 1900 was enacted the Law of Private Railroad is to supersede the Private Railroad Regulations. At the same time the Law of Railroad Traffic was enacted. Such is in brief the history of Japanese railroad legislation.

Principal Points in Private Railroad Law.—Below will be enumerated those points in the Law of Private Railroads that deserve special notice :—

1. Railroad shares must not be acquired except by the payment of money.
2. Unless in virtue of a decision arrived at by a general meeting of share holders and with the sanction of the Minister concerned, no railroad can be chartered or hired or its management entrusted to others.
3. Unless with the sanction of the Minister concerned and after not less than one-fourth of the share capital has been paid up, no railroad company may issue debenture bonds.
4. With the approval of the Minister, a company may contract a loan by mortgaging its railroad with accessories, but they must not be used as object of right of mortgage.
5. The debenture bonds and loans together must not exceed the total sum of the paid-up capital.
6. No company must declare dividends unless after the principal and interest of the bonds and loans payable every year have been substracted from the proceeds.
7. Except in cases specially approved of the gauge must always measure 3ft 6 inches.
8. The Minister concerned may order an alteration of tariff rate, when such alteration is judged necessary for the sake of public interest.
9. The tariff rate of third-class passengers must not exceed 2 *sen* per mile. (This may be increased to no more than 4 *sen* for a distance not exeeding 2 miles.)
10. A company shall be held responsible to offer its lines in accordance with the provisions determined by law or

ordinance, for the use of the Army or the Navy either in time of war or in time of peace.

11. The Government reserve the right of purchasing the line with all its appurtenance after full 25 years from the granting of a permanent charter.

III. RAILROAD LINES.

General Remarks.—The service which possessed lines extending altogether 4,237 miles on March 31st of 1903 had at its inception in 1872 only one short line, that is the Shimbashi-Yokohama line. It was the original idea of the Government to lay a trunk line from Tokyo to Kobe and Ōsaka and Kyoto. The Tokyo-Yokohama line and a line starting from the vicinity of Lake Biwa and terminating at Tsuruga were to form deflections. For the trunk line extending from Tokyo to Kyoto the programme originally adopted the Nakasendo route. But a result of the final survey demonstrated that the route involved stupendous labor and expense, many steep hills and passes being present along it. Therefore that route was abandoned and the Tōkaidō route was adopted as a substitute. Consequently the Takasaki-Uyeda line that had been intended as part of the trunk line and the Uyeda-Naoyetsu line that had been selected to facilitate the conveyance of construction materials had to form combinedly an independent section known by the name of the Shinyetsu line.

The programme of construction as contemplated at first consisted in the main in the shape as indicated above. In 1889 however, the construction of the Ofuna-Yokosuka section was decided upon.

The routes indicated in the Law of Railroad Construction are to be undertaken in principle by the State, but some provision for the modification of this general rule existed to meet applications made by any private railroad company for permission to lay its own line along a route comprised in the Government programme but the construction of which was not yet taken in hand. But in allowing a private company to construct its own line along such a route the Government had to get the consent of the Diet, as is still the

case. The official routes thus transferred to private enterprises are not few.

First Period Construction Programme.—Of the routes included in the construction programme, those that required to be more speedily constructed than the others were singled out and were set apart to be called collectively the First Period Construction Programme. These lines, extended altogether over 1,900 miles approximately, and in their case the work of construction had to be completed in twelve years from the commencement. According to the inquiries carried out on March 31st of 1903, 1101 miles out of that length, that is more than one half of the whole, had already been opened to traffic.

Second Period Construction Programme.—The lines left behind after selecting the First Period Programme form the so-called Second Period Programme extending altogether over 2,525 miles approximately. Of that mileage 674 miles have already been given over to private companies with the approval of Diet. Of the 674 miles thus conceded to private companies 395 miles had already been opened to service according to the reports sent in on March 31st of 1903.

Private Railroads.—The pioneer of private raliroad enterpries in Japan is the Nippon Railroad Company which obtained in November of 1881 a charter for laying the Tokyo-Aomori line. It was a rather bold undertaking at that time, for the people had not yet possessed sufficient experience in the work while the length of the line, several hundred miles in all, necessitated the investment of quite a large amount of capital. Then there were no data to form any reliable estimates on profit and loss, so that the estimates made were at best purely conjectural. In view of all those circumstances the Government, in compliance with the request of the company, decided to guarantee its profit within a certain limit and moreover extended every possible convenience tending to further the work. In June of the following year the company started the work on the Tokyo-Mayebashi line, and 1883 the Uyeno-Kumagaye section was opened to traffic. Thus the period of private railroad enterprises was ushered in. Since then private railroad work has made its

Nippon Railroad Company.

appearance in quick succession, and side by side with the State railroad work has contributed to promoting the activity of railroad enterprises in Japan. Indeed the rise of private undertakings of this special sort has been remarkably active. This was especially the case in the two years of 1896 and 1897. At the end of the former year alone applications for provisional charters numbered 555. Naturally the mileage under traffic of private railroads went on advancing, the mileage opened in the tow years of 1897 and 1898 alone extending over 400 miles each.

Progress of Railroad work.—The following figures gave progress of railroad work from 1872:—

Fiscal Year.	Government.	Private.	Total.
At the end of	m. ch.	m. ch.	m. ch.
1872	18.00	—	18.00
1877	65.11	—	65 11
1882	170.66	—	170.66
1887	300.43	293.24	593.67
1892	550.49	1,320.28	1,870.77
1893	557.49	1,381.03	1,983.52
1894	580.69	1,537.35	2,118.24
1895	593.22	1,697.21	2,290.43
1896	631.62	1,875.29	2,507.11
1897	661.65	2,287.05	2,948.70
1898	768.37	2,652.13	3,420.50
1899	832.72	2,806.00	3,638.72
1900	949.69	2,905.16	3,855.05
1901	1,059.48	2,966.48	4,026,16
1902	1,226.56	3,010.60	4,237.36

Lines under different Ownership.—To classify the mileage existing at the end of the 1902 fiscal year according to the condition of management and possessorship, the mileage under the management of the Department of Communications headed the list with 1,062 miles, closely followed by the Nippon Railroad Company with 857. Then came the Kyūshū Railroad with 416, and the Sanyō Railroad with 334.

Lines classified according to Mileage.—The condition of railroads being examined according to the length of lines, the following table is obtained:—

	Under 20 Miles.	20-50 Miles.	50-100 Miles.	100-200 Miles.	200-500 Miles.	500 and above	Total.
No. of Establishments...	14	19	3	2	3	2	42
Mileage (m. and ch.) ...	178.70	596.46	225.30	358.53	958.27	1,919.50	4,237.36
Percentage	4.2	14.1	5.3	8.5	22.6	45.3	100.

The foregoing table shows that the number of establishments is largest for lines measuring from 20 to 50 miles, the next largest being those measuring under 20 miles. As to mileage those establishments owning or managing over 500 miles contribute about one half of the total mileage under traffic.

Lines classified according to Gauge.—The regulation gauge of Japanese railroad is 3 feet 6 inches, but it is 2 feet 6 inches for light railroad. According to the inquiries made on March 31st of 1903, the mileage under the regulation gauge totalled 4,174 miles 1 chain and that of the 2 ft. 6 inches gauge 63 miles 35 chains. Therefore the latter constituted only 1.5 per cent, out of the whole 100 under traffic.

Mileage and Geographical Divisions.—The existing mileage under traffic is further classified as follows according to the natural geographical divisions of the country, and also the ratio of mileage to population.

Natural Division.	Area Exclusive of Outlaying Islands. (sq. Miles).	Population.	Railroad Mileage (m. ch).	Mileage per 100 sq. Miles. (Miles).	Mileage per 10,000 People. (Miles).
Honshū	86,329	34,196,471	3,223.21	3.68	0.78
Kyūshū	13,771	6,586,682	448.27	3.20	0.54
Hokkaidō	30,123	1,003,751	390.39	1.24	3.71
Shikoku	6,858	2,961,714	75.29	1.10	0.20
Total	137,081	44,748,618	4,237.36		

IV. ROLLING STOCK.

Total Number of Vehicles.—It is natural that with the extension of traffic mileage and with the advance of the volume of traffic, amount of rolling stock should also increase. The number existing each year from inauguration of the service is given below :—

Fiscal Year.	Locomotives.			Passenger Cars.			Wagons.		
At the end of	Gov.	Private.	Total.	Gov.	Private.	Total.	Gov.	Private.	Total.
1872	10	—	10	58	—	58	75	—	75
1877	38	—	38	160	—	160	320	—	320
1882	47	—	47	240	—	240	503	—	503
1887	53	30	83	313	138	451	887	364	1,251
1892	133	185	318	630	739	1,369	1,753	2,819	4,572
1893	142	211	353	647	806	1,453	1,851	3,365	5,316
1894	167	273	440	678	968	1,646	2,112	4,321	6,413
1895	171	351	522	705	1,238	1,943	2,235	5,156	7,391
1896	183	429	612	796	1,475	2,271	2,328	6,582	8,910
1897	258	636	894	871	2,029	2,900	2,930	8,541	11,471
1898	317	786	1,103	989	2,837	3,811	3,295	10,827	14,122
1899	343	871	1,214	1,022	3,129	4,151	3,729	12,822	16,551
1900	387	892	1,279	1,085	3,331	4,416	4,291	14,046	18,337
1901	407	943	1,350	1,122	3,407	4,529	5,112	14,708	19,820
1902	453	975	1,428	1,327	3,537	4,864	5,644	15,861	21,505

Capacity and Weight of Vehicles.—The foregoing figures simply indicate the numbers of vehicles, and do not make any discrimination as to their relative capacity. This capacity naturally advancing with the progress of the railroad business, the locomotives that have to draw them are consequently required to possess greater drawing power. Hence in drawing capacity a given number of vehicles as they existed formerly was much less than same number of vehicles to-day. According to the latest inquiries the aggregate weight of 1,428 locomotives totals 63,142 tons, an average of 4.2 tons per one locomotive. Then 4,864 cars possess seating accommodations for 187,049 persons, an average of 38.5 seats per one car; while 21,055 goods wagons possess the freight capacity of 47,509 tons, this being an average of 6.9 tons per one wagon.

Ratio of Vehicles Mileage.—The ratio of vehicles to mileage under traffic is, according to the latest inquiries, 33.7 locomotives, 114.8 passenger cars and 575 wagons per 100 miles.

V. CAPITAL.

Mode of Computation.—The capital invested in the railroad business is divided into two accounts, one on account of construction and the other on account of operation or working. The mode of

computing the capital was somewhat different formerly compared to what it is at present. Thus prior to the 1886 fiscal year the yearly disbursements were added up in the State railroads to the account already existing. The principle of railroad finance was first definity arranged by the enactment in December of 1885 of the Railroad Finance Regulations. In accordance with the provisions of the regulations the *bona fidé* investment was set apart out of the total disbursements made from the beginning of the service, and the capital to be given below is therefore based on the result of that estimate.

Investments of State and Private Lines.—The capital invested in railroad work reached 520,940,963 *yen* according to the inquires made in March of 1903. Of that sum the State railways share amounted to 247,765,963 *yen* and that of private companies the remaining 273,175,000 *yen*. However, the preceding figures do not represent the amount actually invested. They are only the nominal amount. The amount actually invested as calculated in the year mentioned above was as follows:—

	yen.
Government Railroads	144,395,060
Private Railroads	231,808,970
Total	376,204,030

The above sum distributed among the various accounts, the following table is obtained.

GOVERNMENT RAILROADS.

Items.	*yen.*
Consolidated Capital	141,945,060
Working Capital	200,000
Stores Funds	2,250,000
Total	144,395,060

PRIVATE RAILROADS.

Items.	*yen.*
Consolidated Capital	216,749,888
Stores	4,749,471
Others (Temporary Construction Disbursements, etc.)	10,309,611
Total	231,808,970

Financial Resources of Railroads.—As to the sources from which the capital was derived, for the State railroads the bulk consists of the proceeds of loans (the amendment of Railroad Construction Law provides that the proceeds other than those of loans may be used on account of railroad work) and a part of proceeds from traffic receipts. In the private railroads the capital generally consists of share capital, though not unfrequently they procure funds by means of debenture bonds or ordinary loans. The capital of private railroad companies distributed among the different items of sources, the following result is obtained:—

	yen.
By Share Capital	202,603,626
By Debenture Bonds	12,852,600
By Loans...	6,734,668
Others (as, for instance, transferred from Receipt Account)	9,618,076
Total	231,808,970

It will be seen from the above that the capital of Japanese private railroad companies consists of share-capital to the extent of 87 per cent. of whole sum, the rest supplied by debenture bonds or loans. The funds procured by bonds or loans constitute a temporary account and are temporarily made to take the place of instalment of share-capital to be paid in. This point presents a distinct feature in the railroad finance of Japan as compared with that of Western countries. In the latter debenture bonds are regarded from the first as legitimate source of railroad funds, but in Japan they are issued when the payment of the subscription is judged difficult or when there is no time to call in the share-capital by ordinary process. They are issued as a temporary expedient, and are therefore regarded as temporary resource.

Cost of Construction and Traffic Mileage.—The foregoing capital comprising all those accounts relating to lines not yet open to traffic, it is not possible to give an accurate comparison between the capital and traffic receipts and disbursements and similar matters. Therefore for the convenience of making this exact

comparison, the cost of construction disbursed during the last nine years on account of traffic miles alone will be given below:—

Fiscal Year.	Government.	Private.	Total.
1894	37,650,657	54,927,766	92,578,423
1895	39,279,435	66,109,351	105,388,786
1896	43,658,043	67,253,598	110,906,641
1897	46,317,417	105,298,041	151,615,458
1898	60,050,614	144,725,478	204,776,092
1899	69,979,049	173,444,231	243,423,280
1900	85,573,511	191,230,391	276,803,902
1901	100,590,209	202,804,045	303,394,254
1902	125,714,859	213,231,933	338,946,792

The average cost of construction for the past few years' account as mentioned in the foregoing table amounts to 102,482 *yen* per one mile of State lines and 70,912 *yen* per one mile of private lines, the average of the two being 80,059 *yen*.

VI. VOLUME OF TRAFFIC.

Data Relating to Passenger and Freight Traffic.—Data relating to passenger and freight traffic requiring complicated inquiries, it is not possible to obtain reliable figures for the years prior to 1889. The only data available for those early years consist of the number of passengers and the tonnage of goods. They are however devoid of any great value for investigating the exact state of railroad traffic. For that purpose the data for demonstrating the extent of utilization of the service both by passengers and goods must be obtained. In other words the passenger mileage (calculating the mileage of travel by passengers) and goods ton mileage (calculating the mileage of the conveyance of goods) are necessary for giving accurate statistics on railroad traffic business. Consequently the returns from 1890 which have been compiled on the principle explained will be given below:—

PASSENGER TRAFFIC.

Fiscal Year.	Government.	Private.	Totat.
1891	11,265,383	11,575,247	22,840,630
1892	12,873,547	15,590,168	28,463,715
1893	14,444,327	18,090,836	32,535,163
1894	14,883,986	21,639,321	36,523,307
1895	18,764,387	30,451,191	49,215,578
1896	22,750,749	43,478,370	66,229,119
1897	27,922,577	57,175,600	85,098,177
1898	31,590,764	67,471,125	99,067,889
1899	28,663,683	73,452,259	102,115,942
1900	31,944,856	81,766,015	113,710,871
1901	32,074,254	79,136,954	111,211,208
1902	31,897,045	78,121,456	110,018,501

PASSENGER MILEAGE.

Fiscal Year.	Government.	Private.	Total.
1891	284,831,381	185,469,252	470,300,633
1892	298,958,693	283,962,002	582,920,695
1893	341,637,335	314,135,567	655,762,902
1894	403,536,788	423,933,330	827,470,118
1895	523,044,579	552,554,089	1,075,598,668
1896	535,925,403	633,642,176	1,169,567,579
1897	623,335,927	839,118,735	1,462,454,662
1898	675,040,127	958,284,992	1,633,325,119
1899	635,044,513	1,076,805,648	1,711,850,161
1900	115,213,181	1,187,768,933	1,903,042,114
1901	725,605,652	1,173,647,725	1,899,253,377
1902	732,737,482	1,140,854,317	1,873,591,799

PASSENGER RECEIPTS.

Fiscal Year.	Government.	Private.	Total.
1891	3,183,383	1,966,532	5,149,915
1892	3,335,609	3,122,946	6,458,555
1893	3,791,501	3,404,926	7,196,427
1894	4,229,005	4,326,804	8,555,809
1895	5,656,410	5,883,506	11,539,916
1896	5,984,581	7,242,495	13,227,076
1897	7,003,795	9,904,292	16,908,087
1898	7,722,425	11,929,364	19,651,789
1899	9,291,050	14,126,326	23,417,376
1900	10,441,171	16,100,291	26,541,492
1901	10,648,762	16,929,621	27,578,386
1902	11,520,422	17,097,369	28,617,791

GOODS TRAFFIC.

Fiscal Year.	Government.	Private.	Total.
1891	671,561	1,088,645	1,760,206
1892	982,404	1,719,316	2,701,720
1893	1,076,689	2,414,394	3,491,083
1894	1,018,298	3,265,404	4,283,702
1895	1,100,059	4,231,353	5,331,412
1896	1,266,119	5,579,112	6,845,231
1897	1,558,194	7,070,315	8,628,509
1898	1,793,896	8,122,230	9,916,126
1899	2,391,471	9,428,563	11,820,034
1900	2,806,560	11,594,960	14,401,520
1901	2,659,602	11,750,150	14,409,752
1902	3,183,720	12,938,951	16,122,671

GOODS-TON MILEAGE.

Fiscal Year.	Government.	Private.	Total.
1891	25,744,580	39,337,845	65,082,425
1892	44,827,316	92,017,807	136,845,123
1893	54,437,438	114,637,372	169,074,810
1894	72,334,004	161,025,073	233,359,077
1895	76,823,086	207,484,549	284,307,635
1896	74,334,819	238,766,349	313,101,168
1897	96,480,877	312,901,264	412,382,141
1898	133,132,239	346,041,975	479,174,214
1899	177,318,088	422,152,648	599,470,736
1900	223,654,688	508,844,010	732,498,698
1901	215,280,085	575,826,909	791,106,994
1902	248,131,029	660,675,941	908,806,970

GOODS RECEIPTS.

Fiscal Year.	Government.	Private.	Total.
1891	778,798	998,742	1,777,540
1892	1,075,342	1,743,455	2,816,797
1893	1,243,850	2,166,556	3,409,906
1894	1,589,565	2,933,926	4,523,491
1895	1,808,489	3,838,127	5,646,616
1896	1,646,323	4,439,366	6,085,689
1897	2,064,776	6,055,547	8,120,263
1898	2,810,033	7,499,787	10,309,820
1899	3,731,976	8,994,869	12,726,845
1900	4,499,792	10,926,376	15,426,168
1901	4,404,917 *535,784	11,431,032 *1,199,167	15,835,949 *1,734,951
1902	5,053,487 *638,601	12,152,660 *1,936,083	17,206,147 *2,574,684

Note :—The figures marked with (*) indicate charges incidental to arrival and sending of goods.

Relation Between Passenger and Freight Traffic.—As shown in the preceding table, though in the returns of latest year's traffic volume, in one or two items a slight decrease is noticed, on the whole the volume indicates a steady advance, showing

how the railroad service is contributing very much to the exploitation of industries and to their development. One cannot but regret, however, that the degree to which our people make use of this important factory of civilization and prosperity is still comparatively limited. The volume of passenger traffic for the last year given above compared with the population, the ratio per one person does not exceed only 2.4 ridings and 42 miles of travel in a year. At the same time this comparatively imperfect utilization of railroad by our people is not without a consoling side, in that it serves as a sign of future hopefulness of the business. The existing condition of the traffic service lends powerful support to the reasonableness of this conjecture, for whereas in most other countries the volume of goods traffic and the receipts thereof surpasses those of passenger traffic, the former being the principal item of revenue and the latter subordinate to it—in Japan the relative position of the two is reversed, the volume and receipts of passenger traffic always exceeding those of the other. This state of railroad traffic in Japan is entirely attributable to the fact that the progress of the country is not yet so perfect as in the West. Already signs are discernible that our railroad business will develop before long a normal feature as seen in Europe and America, for as shown in the following figures the ratio of volume and revenue of goods traffic to the volume and revenue of passenger traffic is steadily advancing. The arrival of that period will not only enable our railroads to discharge their function with more efficiency than is the case at present, but will at the same time serve as a clear proof that our economic enterprises have reached a stage of real activity and prosperity. In short, any amount of room exists for the future development of our railroad business.

RATIO OF FREIGHT RECEIPTS PER 100 OF PASSENGER RECEIPTS.

Fiscal year.		Fiscal Year.	
1890	34.5	1896	46.0
1891	39.5	1897	48.0
1892	43.6	1898	52.5
1893	47.4	1899	54.3
1894	52.9	1900	58.1
1895	48.9	1901	63.7
		1902	69.1

The average traffic mileage of passengers and goods and the average receipts per one mile are shown below, the increase of the average passenger fare being attributable to the advance of the rate carried out in view of the general advance of the market price of commdities.

Fiscal year.	Per One Passenger.		Per One Ton of Goods.	
	Mileage.	Fare per One Mile.	Mileage.	Freight per One Mile.
	Mile.	*sen.*	Mile.	*sen.*
1891	21	1.10	37	2.69
1892	20	1.11	51	2.06
1893	20	1.10	48	2.02
1894	23	1.03	54	1.94
1895	22	1.07	53	1.99
1896	18	1.13	46	1.94
1897	17	1.16	48	1.97
1898	16	1.20	48	2.15
1899	17	1.37	51	2.12
1900	17	1.39	51	2.11
1901	17	1.45	55	2.00

The average volume of traffic per one mile and per one day computed on the returns for the latest year mentioned in the table, the ratio for passenger amounts to 1,313 and that for goods 547 tons.

VII. TRAFFIC RECEIPTS AND DISBURSEMENTS.

General Remarks.—To review the returns from the commencement of the service to the 1901 fiscal year the receipts for 1873 totalled about 441,000 *yen* as against the disbursement amounting to over 232,000 *yen*, yielding a profit of over 208,00 *yen*. In 1876 the receipts amounted to 1,284,060 *yen* and the disbursements to over 434,000 *yen*, leaving a net profit of over 850,000 *yen*. In the following year the receipts fell off while the disbursements increased, and the result was that the amount of net profit did not reach even one half of the profit in the preceding year. Coming to 1878 year the normal aspect was somewhat recovered, though the

net profit did not exceed 456,000 *yen* in round numbers. Matters continued improving from 1879 to 1881, the profit for the last-mentioned year amounting to over 1,030,000 *yen*. In the following year owing to traffic expense having gone up compared with the receipts, the net profit fell to about 910,000 *yen*. The opening of several private railroads and the better facilities afforded to railroad travelling resulted in more or less of an increase of the traffic receipts in 1883, but in the following three years the record again sustained a slight fall, from which, however, it recovered once more in 1887. The profit was unusually great in the two following years it having exceeded 2,470,000 *yen* in the first and 3,530,000 *yen* in the second. From that time onward the receipts have steadily continued to advance, to 16,400,000 *yen* in the 1895 fiscal year and to 26,410,000 *yen* in the 1902 fiscal year, both being in round numbers.

Private railroad companies are entitled to undertake at the same time warehousing and carriage business and also the extraction of coal and other minerals. The receipts of this special kind are indicated by an asterisk in the following tables:—

EARNINGS.

(unit of *yen*).

Fiscal year.	Government Railroads.	Private Railroads.	Total.
1873	441,615	—	441,615
1877	910,336	—	910,336
1882	1,840,394	—	1,840,394
1887	1,693,873	1,182,345	2,881,218
1892	4,580,632	5,096,631	9,677,266
1893	5,384,455	5,981,057	11,365,512
1894	5,819,413	7,803,008	13,622,421
1895	8,004,234	10,543,387	18,547,621
1896	8,273,652	12,373,775	20,915,814
1897	9,727,490	17,764,176	27,491,666
1898	11,165,889	21,413,932	32,579,821
1899	13,804,375	24,866,300	38,670,675
1900	16,045,775	29,014,009	45,059,784
1901	16,776,519	31,640,328	48,416,874
1902	18,336,582	33,344,213	51,680,795

EXPENSES.

1873	232,830	—	232,830
1877	526,248	—	526,248
1882	926,548	—	926,548
1887	677,124	392,542	1,069,666
1892	2,166,199	2,437,138	4,603,337
1893	1,942,375	2,512,149	4,454,524
1894	2,181,696	3,155,459	5,337,155
1895	2,951,561	4,195,234	7,146,795
1896	3,815,663	5,237,426	9,053,089
1897	4,786,049	7,578,047	12,364,096
1898	6,380,951	11,422,514	17,803,465
1899	6,706,112	12,236,540	18,942,652
1900	7,271,565	13,622,156	20,893,721
1901	8,547,226	15,093,086	23,640,312
1902	9,066,165	16,203,223	25,269,388

NET EARNINGS.

1873	208,785	—	208,785
1877	384,088	—	384,088
1882	913,846	—	913,836
1887	1,021,749	789,803	1,811,552
1892	2,414,433	2,659,496	5,073,929
1893	3,442,080	3,468,908	6,910,988
1894	3,637,717	4,647,549	8,285,266
1895	5,052,673	6,348,153	11,400,826
1896	4,457,989	7,404,736	11,862,725
1897	4,941,441	10,186,129	15,127,570
1898	4,784,938	9,991,418	14,776,356
1899	7,098,263	12,629,760	19,728,023
1900	8,774,210	15,391,853 * 953,897	24,166,063 * 953,897
1901	8,229,293	16,547,242 *1,094,453	24,776,535 *1,094,453
1902	9,270,417	17,140,990 *1,218,850	26,411,407 *1,218,850

ACCOUNT PER ONE MILE.—With this marked advance of traffic receipts and profit the traffic mileage has also made an equally marked extension. The traffic earnings and expenses as well as the net earnings per one mile are given in the following table:—

GOVERNMENT RAILROADS.

(unit of *yen*).

Fiscal year.	Earnings.	Expenses.	Net Earnings.
1873...	24,534	12,935	11,599
1877...	13,975	8,075	5,896
1882...	17,892	9,008	8,884
1887...	7,209	2,873	4,336
1892...	8,319	3,934	4,385
1893...	9,656	3,483	6,173
1894...	10,294	3,859	6,435
1895...	13,651	5,034	8,617
1896...	13,537	6,243	7,294
1897...	15,020	7,390	7,630
1898...	15,420	8,812	6,608
1899...	16,898	8,209	8,689
1900...	17,914	8,118	9,796
1901...	16,451	8,381	8,070
1902...	16,185	8,002	8,183

PRIVATE RAILROADS.

1883...	6,355	2,419	3,936
1887...	4,964	1,648	3,316
1892...	4,082	1,952	2,130
1893...	4,468	1,876	2,592
1894...	5,354	2,165	3,189
1895...	6,520	2,594	3,926
1896...	7,453	3,088	4,365
1897...	8,764	3,739	5,025
1898...	8,684	4,632	4,052
1899...	9,124	4,490	4,634
1900...	10,214	4,796	5,418
1901...	10,748	5,127	5,621
1902...	11,194	5,439	5,755

GOVERNMENT AND PRIVATE RAILROADS.

1883...	11,387	4,550	6,837
1887...	6,081	2,258	3 823
1892...	5,378	2,558	2,820
1893...	5,994	2,349	3,645
1894...	6,735	2,639	4,096
1895...	8,418	3,233	5,174
1896...	9,065	3,923	5,142
1897...	10,279	4,623	5,656
1898...	10,211	5,580	4,631
1899...	10,915	5.347	5,568
1900...	12,095	5,592	6,467
1901...	12,215	5,964	6,251
1902...	12,570	6,146	6,424

ITEMS OF RAILROAD ACCOUNT.—Receipts accruing from railroad traffic are classified into three main headings, namely, passenger car receipts, wagon receipts, and miscellaneous receipts; then traffic expenses are divided into four classes, maintenance expense, locomotive expense, transportation expense and general expense. These different items were as follows in the 1902 fiscal year:—

TRAFFIC RECEIPTS.

Items.	*yen.*	Per Centage.
Passenger Car Receipts	30,039,870	58.1
Wagon Receipts	19,934,142	38.6
Miscellaneous Receipts	1,706,783	3.3
Total	51,680,795	100.0

TRAFFIC EXPENSES.

Maintenance Expense	5,474,979	21.7
Locomotive Expense	10,140,771	40.1
Transportation Expense	6,619,857	26.2
General Expense (Including Taxes) ...	3,033,781	12.0
Total	25,269,388	100.0

In comparing, on the basis of the same year's returns, the ratio which traffic receipts bear to cost of construction of lines under traffic, it is found that it amounts to 7.4 per cent. for the State lines and 8 for the private lines, the average being 7.8 per cent.

CHAPTER II.—Ships and Shipping Business.

Ships—Shipbuilding—Sailors—Life-Boat Business—Protection to Navigation—Nautical Signals—Open Ports.

I. SHIPS.

General Remarks.—Ships as originally existed in Japan were those known by the name of junks. In construction and size they were utterly unsuited for ocean service. With the adoption of the polity of enlightened progress by the Imperial Government and the encouragement of marine navigation the list of foreign-patterned ships steadily went on increasing in number. In reviewing the history of our carrying trade during these last thirty four or five years it is found that the number and tonnage of steamers steadily increased up to the end of 1893. The Japan-China war of 1894—1895 years served as an occasion of introducing epoch-making change in the condition of carrying trade, for so remarkable has been its progress since that time and so many were the steamers that were added to the list, that at the end of 1902 they numbered altogether 1,441 with an aggregate tonnage of 610,446 tons. Compared with the list at the end ef 1893 the number increased twofold and the freight capacity threefold. The case was somewhat different with sailing ships, for though they continued to increase both in number and tonnage up to 1888, they began to fall off after that year, this downward movement reaching the climax in 1896. At the end of that year the ships of this class numbered 644 representing 44,055 tons altogether. After 1898, however, another change came over this branch of shipping activity. At the end of that year the aggregate increased at one jump to three times as much as it was in the preceding year. This tendency continued in the succeeding years, so that at the end of 1901 the ships of this type numbered 4,020 with no less than 336,436 tons altogether. In the following

year the corresponding figures fell slightly, being 3,977 and 336,154 respectively. This remarkable increase both in the number of vessels and in their tonnage compared with what it was before is to be sought in the fact that, in consequence of the amendment of the Ship Inspection Law, the *koku* system of computing the capacity that had previously been adopted for quite a large number of ships was superseded by the ordinary method of computation by tonnage. Naturally this resulted in a large increase in the gross tonnage. The increase of steamers has also had a stimulating influence on the construction of subsidiary vessels of this particular type.

NUMBER AND TONNAGE.—The principle of the survival of the fittest has driven the native junks to the wall, for not only are they not up to the requirements of modern navigation, but the Government has decided to restrict the building of ships of this type. Below is given a table showing the number and tonnage of ships from 1870, and especially during the last ten years :—

	Steamers.		Sailing Ships.		Junks (over 50 *koku*).	
Year.	No.	Tonnage.	No.	Tonnage.	No.	*koku* Tonnage.
1870... ...	35	15,498	11	2,454	?	?
1872... ...	96	23,364	35	8,320	18,640	3,312,281
1877... ...	183	49,105	75	13,648	18,964	3,251,425
1882... ...	344	42,199	428	48,985	17,331	2,930,842
1887... ...	486	115,365	798	64,416	17,194	2,851,247
1892... ...	642	165,764	780	49,085	18,205	3,069,816
1893... ...	680	176,915	749	48,303	17,209	2,878,462
1894... ...	745	273,419	722	46,959	17,300	2,876,131
1895... ...	827	341,369	702	44,794	17,360	2,960,887
1896... ...	899	373,588	644	44,055	17,612	3,066,128
1897... ...	1,032	438,779	715	48,130	19,097	3,320,284
1898... ...	1,130	477,430	1,914	170,894	19,099	3,049,035
1899... ...	1,221	510,007	3,322	286,923	18,479	2,713,646
1900... ...	1,329	543,365	3,850	320,571	18,796	2,785,114
1901... ...	1,395	583,532	4,020	336,436	19,758	2,921,565
1902... ...	1,441	610,446	3,977	336,154	18,743	2,351,950

Note :—The tonnage as given in the table was the registered tonnage prior to 1884 inclusive, after which the gross tonnage computation has been used. The *koku* used for indicating the freight capacity of Japanese junks amounts to one-tenth of a gross ton.

Two Main Classes of Ships.—It should be noted here that Japanese ships and boats are divided, according to the provisions of the Law of Ships, into two main classes, that is those which require shipping certificates and those which do not require such certificates. (Art. 20 of the Law of Ships provides that ships below 20 gross tonnage or the *koku* freight capacity not exceeding 200 *koku*, lighters or boats worked by the use of oars alone need not require shipping certificates). The ships requiring the certificate are called "registered ships" and those not requiring it "unregistered ships." It is hardly necessary to add that the ships of the registered class form the mainstay of the maritime trade, and those of the unregistered type are accessories to them. Hence it is sufficient to give here data about the registered class ships alone. Before doing so a brief remark will be made on the relative number, kind, etc. of registered and unregistered ships during the last ten years:—

	Registered Ships.			Unregistered Ships.		
Year.	Steamers.	"Tonnage" Sailing Ships.	"*koku*" Sailing Ships.	Steamer.	"Tonnage" Sailing Ships.	"*koku*" Sailing Ships.
1893	400	218	—	280	531	17,209
1894	461	196	—	284	526	17,300
1895	528	173	—	299	529	17,360
1896	570	165	—	329	479	17,612
1897	626	171	—	406	544	19,097
1898	674	1,310	—	456	604	19,099
1899	753	2,783	222	468	539	18,257
1900	859	3,309	911	470	541	17,885
1901	969	3,565	1,355	426	455	18,403
1902	1,033	3,591	1,260	408	386	17,483

Carrying Capacity of Ships.—The average carrying capacity of ships flying Japanese flag increases or decreases with the progress of times and according to kind, for though the carrying capacity should enlarge with the extension of scope of navigation, the progress of trade or of shipbuildings business, this remark can apply only to ships of one and the same class, placed under the same circumstance. But the ships differing in construction or kind, or differing in the nature of service cannot make any uniform progress

in their average carrying trade. In making further inquiries, the average carrying capacity of steamers of registered class that was 427 tons in 1887 and 419 in 1892, jumped at one bound to 572 in 1894. The average recorded after 1895 was even as high as 689 tons. This extraordinary increase of the average tonnage was chiefly attributable to the purchase of many large steamers on the occasion of the Japan-China war and also after it. The average of "tonnage" sailing ships was 135 tons in 1887, 143 in 1892, 160 in 1897. Coming to 1902 it fell down to only 92 tons.

Number of Ships Classified by Carrying Capacity.—The number of registered ships classified according to size, the bulk for "tonnage" sailing ships consisted during the last ten years of those ranging from 20 to 100 tons; those of 100–500 tons followed next, while only a small number were of over 500 tons. This progressive diminution of number with an increase of carriage capacity is also seen in steamers, for those of over 5,000 tons did not exceed one-fiftieth of the whole number even at the time when big steamers reached the highest record. The following table showing the comparative statement of registered tonnage, etc. will further explain this point:—

STEAMERS.

Year.	20—100 Tons.	100—1000 Tons.	1000—5000 Tons.	Over 5000 Tons.	Total.
1893	119	225	56	—	400
1894	132	242	76	1	461
1895	148	266	113	1	528
1896	157	287	125	1	570
1897	175	311	132	8	626
1898	202	328	130	14	674
1899	262	343	132	16	753
1900	349	351	142	17	859
1901	427	372	150	20	969
1902	479	372	162	20	1,033

"TONNAGE" SAILING SHIPS.

Year.	20—100 Tons.	100—500 Tons.	Over 500 Tons.	Total.
1893...	108	102	8	218
1894...	85	104	7	196
1895...	68	98	7	173
1896...	67	91	7	165
1897...	69	95	7	171
1898...	635	668	7	1,310
1899...	1,752	1,025	6	2,783
1900...	2,201	1,104	4	3,309
1901...	2,362	2,201	2	4,565
1902...	2,348	1,241	2	3,591

NUMBER OF SHIPS CLASSIFIED BY TYPES.—To classify the registered ships according to their type and the material used in their construction of the frame-work, steamers were generally built of wood at first. With the expansion of the service and the increase of carrying capacity, iron or steel-framed steamers have increased in number. Then in the relative number of iron-frame or steel-frame steamers, the latter were at first very small, not exceeding one-sixth of the whole in 1892. The ratio gradually advanced till the relative position was reversed after 1899. At the end of 1902 steel-frame steamers constituted 17 per cent., the iron-frame steamers 12 per cent., and the iron-wood composite steamers 1 per cent., in the whole number of registered steamers. The state of things was entirely different with registered sailing-ships. Prior to 1897 there was only one iron-framed vessel and between 1898 and 1900 one steel-framed vessel, the rest having wooden-frames. The following table gives the relative number of ships built during the last ten years, and classified according to the nature of the material of which they were built:—

STEAMERS.

Year.	Steel or Steel-Iron.	Iron.	Iron-Wood.	Wood.	Total.
1893	18	91	12	279	400
1894	35	112	11	303	461
1895	46	131	11	340	528
1896	60	138	11	361	570
1897	81	136	12	397	626
1898	94	125	12	443	674
1899	116	123	13	501	753
1900	136	130	13	580	859
1901	154	135	13	667	969
1902	171	129	13	720	1,033

"TONNAGE" SAILING SHIPS.

Year.	Steel or Iron.	Wood.	Total.
1893	1	217	218
1894	1	195	196
1895	1	172	173
1896	1	164	165
1897	1	170	171
1898	1	1,309	1,310
1899	1	2,782	2,783
1900	1	3,308	3,309
1901	—	3,565	3,565
1902	—	3,591	3,591

NUMBER OF SHIPS AS TO AGE.—To classify the number of registered ships as to age, at the end of 1902 the ships (steamers and sailing ships combined) that were five to ten years old numbered most, followed by those under five years, while those above ten years gradually dwindled in number with their increase in age. For the registered steamers the order of the relative superiority of number was as follows as to age: 5 to 10 years, under 5 years, 10 to 15 years, 15 to 20 years, 20 to 25 years. The foregoing classification also holds good for "tonnage" sailing ships. However the condition differed slightly for "koku tonnage" sailing ships, for in this case the number of ships less than 5 years old was less than that of those 10 to 15 years old.

NUMBER OF SHIPS ON DIFFERENT SERVICES.—According to the

existing laws and ordinances bearing on navigation and ships, there are four kinds of service, these being ocean service, territorial sea service, coasting-service, and inland-water service. The same legislative measures provide strict regulations about the kind, tonnage, construction, etc., and only those that are judged seaworthy are permitted to run on the service.

The registered ships classified according to the different kinds of service were distributed as follows at the end of 1902.

Ocean-going Service.—87 steamers with 287,794 gross tonnage, 5 "tonnage" sailing ships with 598 gross tonnage.

Territoral Sea Service.—269 steamers with 237,098 gross tonnage; 3,369 "tonnage" sailing ships with 318,355 gross tonnage, 1,002 "*koku* tonnage" sailing ships with 480,759 *koku*.

Coasting Service.—332 steamers with 43,613 gross tonnage.

Inland-Water Service.—339 steamers with 3,557 gross tonnage.

Besides, there were in the same year other ships which could not be included in the above list owing to the fact that they had not yet undergone fresh examination after the term of the certificate they obtained before had expired, or that they had not yet received the certificate even when they underwent the examination. Among the ships of this extra class there were 6 steamers with 2,565 gross tonnage, 217 "tonnage" sailing ships with 9,230 gross tonnage, 258 "*koku*" sailing ships with 67,663 *koku*.

II. SHIPBUILDING.

General Remarks.—It goes without saying that the carrying trade being inseparably connected with shipbulding work, the expansion of the one depends upon the activity of the other. As might naturally be expected, the shipbuilding work of Japan that had formerly been confined to the building of Japanese junks alone underwent, with the advent of the new order of things, a radical change in the nature of its work and began to include the building of foreign-shaped ships. With only imperfect experince and with insufficient materials, Japanese shipbuilders could at first build only

sailing ships and small steamers, so that Japan had to depend on foreign shipyards whenever any large steamers had to be built. Steadily and gradually our builders acquired greater experience and knowledge, and the industry, encouraged by the putting in operation in October 1896 of the Law for Encouraging Shipbuilding, has began with energy to make a new departure. Though only a few years have elapsed since that time, already our shipbuliders have succeeded in building large steamers well qualified to be placed on a foreign service. They have even built some steamers to the order of foreign countries. One serious defect however, still, remains unremoved in our shipbuilding industry. That is our inability to get a supply of the necessary materials at home. It is satisfactory, however, to think that the steel-making industry has been started here and there that there is great hope of our shipbuilders being supplied before long with home-made materials which they must now order abroad. When that time has arrived a new epoch will dawn on the shipbuilding industry of Japan.

Number of Foreign-built and Home-built Ships.—Though the supply of ships of large displacement can to-day be satisfied at home, Japan is still more or less dependent in this matter on foreign countries. The relative proportion of foreign-built ships and home-built ships in Japan is shown with greater accuracy by the following statement:—

Year.	Built at Home.				Purchased Abroad.			
	Steamers.		Sailing Ships.		Steamers.		Sailing Ships.	
	No.	Tonnage.	No.	Tonnage.	No.	Tonnage.	No.	Tonnage.
1870–'72 ...	13	250	1	50	71	17,179	34	8,660
1873–'77 ...	43	1,178	32	2,448	77	34,826	29	6,987
1878–'82 ...	149	8,899	431	39,568	18	2,946	47	13,486
1883–'87 ...	95	8,846	113	10,718	32	24,849	9	2,376
1888–'92 ...	147	23,172	63	5,357	40	42,124	1	440
1893	26	3,967	4	459	10	13,036	2	1,778
1894	33	5 847	10	1,311	38	96,072	—	—
1895	47	8,977	6	951	35	96,424	2	572
1896	36	5,860	11	1,061	27	34,891	—	—
1897	57	10,698	18	2,472	22	67,454	—	—
1898	54	13,929	202	20,836	10	44,110	1	114
1899	53	18,157	216	20,342	9	25,474	1	83
1900	53	15,308	193	17,873	13	28,492	2	235
1901	71	31,829	202	20,259	12	16,344	1	113
1902	67	16,328	137	13,035	10	20,634	—	—

Note:—The tonnage consisted of registered tonnage prior to 1889, after which year the gross tonnage has been adopted.

The foregoing table demonstrates that in the matter of building sailing-ships, the industry began to show great activity from about 1876. After 1889 the sailing-ships purchased abroad numbered only one or at most two every year. At present Japan builds all the sailing ships she wants. On the other hand, though the number of foreign-built steamers fell below that of the home-built ones after 1876 in respect to tonnage this superiority of home-built ships occurred only in 1878—1883 years, the tonnage of foreign-built steamers generally surpassing that of the other in most other years. This relative superiority of the tonnage of foreign-built steamers was owing to the fact that the art of shipbuilding had not yet advanced sufficiently at that time in Japan to allow of her undertaking the building of ships of large displacement.

AVERAGE TONNAGE OF HOME-BUILT AND FOREIGN-BUILT SHIPS.—The relative average tonnage of the two classes of ships will make this point still more clear :—

Year.	Average Tonnage of Home Built Ships.		Average Tonnage of Foreign Built Ships.	
	Steamers.	Sailing Ships.	Steamers.	Sailing Ships.
1870–'72	19	50	242	255
1873–'78	274	77	452	241
1879–'82	60	92	164	287
1883–'88	93	95	777	264
1889–'92	158	85	1,053	440
1893–'97	178	138	2,105	588
1898–1902	321	97	2,557	109

TONNAGE AND TYPE OF HOME-BUILT SHIPS.—In order to explain the latest condition of our shipbuilding industry, the displacement and construction of newly built ships at home during the last four years will be shown in the following table :—

TONNAGE OF REGISTERED SHIPS BUILT AT HOME.

Year.	Steamers.					Sailing Ships.			
	20–100.	100–1000.	1000–5000.	Over 5000.	Total.	20–100.	100–500.	Over 500.	Total.
1898	198	278	2	1	479	635	662	4	1,310
1899	258	290	4	2	554	1,750	1,018	3	2,771
1900	342	300	9	2	653	2,201	1,098	3	3,302
1901	417	318	15	4	754	2,362	1,196	1	3,559
1902	469	320	20	4	813	2,348	1,236	1	3,585

CONSTRUCTION OF REGISTERED SHIPS BUILT AT HOME.

Year.	Steamers.					Sailing Ships.		
	Steel or Steel-Iron.	Iron.	Iron-Wood.	Wood.	Total.	Steel or Iron.	Wood.	Total.
1898	22	16	4	437	479	1	1,300	1,301
1899	37	16	5	496	554	1	2,770	2,771
1900	56	18	6	573	653	1	3,301	3,302
1901	70	22	6	656	754	—	3,559	3,559
1902	81	19	6	707	813	—	3,585	3,585

Sailing ships being now almost wholly made at home, the relation of home-built sailing ships and foreign-built sailing ships as to tonnage and construction is practically identical with that explained at some length in the first chapter concerning the general condition of sailing-ships in Japan. As to steamers, the smaller vessels not exceeding 100 tons numbered most, being followed by those ranging from 100 to 1,000 tons, steamers above 1,000 tons being comparatively scarce. In regard to construction the majority of the vessels were of wood, followed by steel-framed and iron-framed vessels, and lastly by wood-iron composite vessels. Comparing the foregoing particulars with the details as specified in the first chapter, it can be seen that while vessels under 1,900 tons displacement were mostly built at home those of large displacement came from foreign dockyards. Then in construction the wooden vessels were in most cases built at home, steel and wood-iron composite vessels being built at home and foreign dockyards in nearly equally proportion. But in regard to iron-framed vessels the share contri buted by home shipyards was very small.

Shipyards.—Our shipbuilding yards have considerably been increased in number. At the end of 1892 they numbered only 60, and the number grew to 106 six years later, and then to 1,666 at the end of 1902.

Protection of Shipbuilding Work.—A few words should be said concerning the Law of Encouraging Shipbuilding mentioned

above. The encouragement bestowed by this law is in the form of bounties granted to ships built according to the rules prescribed by that law. They must also be built at the shipyards possessing the qualifications determined by this law. The bounty is 12 *yen* per ton of the body of the ship for steamer of not more than 700 or not less than 1,000 gross tonnage. The rate is 20 *yen* for one exceeding 1,000 tons. Further, the additional bounty at the rate of 5 *yen* per one horse-power is granted on the engine.

The steamers built or in course of building at our shipyards from the enforcement of the law in question to the end of 1902 number 33 with an aggregate gross tonnage amounting to about 80,091.

III. SHIPS CREW.

Legislative Measure.—The first legislative measure was that issued by the Government in June 1896. It related to the license examination of captains, mates and engineers for foreign-shaped ships. The measure provided that unless possessing the licenses granted in accordance with the provisions contained in it no person could become captain or mate or engineer for a foreign-style ship of not less than 100 registered tonnage and 50 effective horse-powers. The measure has more than once been subjected to amendment until it finally assumed its present form. The existing law was issued in 1896.

Officers.—The ship's officers comprise, according to the law, captains, first and second mates, chief and first engineers, all of whom are required to possess the proper license to be qualified for their respective services. No discrimination with regard to nationality is enforced with regard to this qualification, and those who are legally qualified according to the Japanese law are permitted, no matter what nationality they belong to, to be officers of ships flying the Japanese flag. Appended is a statement giving particulars of the number of the licensed officers and of the relative number of Japanese and foreign officers from 1882 to 1887 and also during the last ten years.

LICENSED OFFICERS.

Years.		1st Class. Captains.	1st Class. Mates.	2nd Class. Captains.	2nd Class. Mates.	Captains 2nd Class Engineers and Mates.	Chief Engineers.	Engineers.	Total.
1882	Japanese.	33	137	323	790	—	11	607	1,901
	Foreigners.	103	77	2	22	—	72	45	325
1887	„	74	243	359	1,247	—	29	785	2,737
	„	189	110	2	21	—	135	75	532
1892	„	176	339	415	1,533	—	74	1,267	3,804
	„	256	143	2	21	—	172	124	718
1893	„	190	360	428	1,541	—	83	1,294	3,896
	„	263	142	2	20	—	174	126	727
1894	„	198	367	434	1,547	—	91	1,341	3,978
	„	286	156	2	20	—	184	139	788
1895	„	227	380	432	1,559	—	125	1,412	4,135
	„	308	169	2	20	—	196	146	839
1896	„	282	384	448	1,618	—	165	1,581	4,477
	„	328	184	2	20	—	203	150	887
1897	„	346	373	480	2,496	1,199	228	1,922	7,044
	„	362	188	2	21	—	212	153	938
1898	„	339	303	305	1,969	8,202	252	1,826	13,196
	„	141	38	—	1	—	67	29	276
1899	„	351	323	311	2,047	8,632	259	2,013	13,936
	„	145	48	—	1	1	73	34	302
1900	„	366	364	325	2,099	8,976	275	2,153	14,558
	„	146	51	—	1	1	75	34	311
1901	„	396	445	335	2,179	9,349	299	2,395	15,389
	„	155	51	—	1	1	75	36	319
1902	„	425	495	341	2,274	9,515	326	2,601	15,977
	„	162	51	—	1	1	79	39	333

The foregoing table shows that the number of Japanese officers of all classes and grades is steadily advancing. This was also the case with foreign officers prior to 1898, but since then, as a result of legislative changes, their number has gone down quite suddenly. To carry the comparison still further, the management of craft of larger displacement had to be left at first, owing to the peculiar circumstances of the case, in charge of foreign officers, so that Japanese officers had to content themselves with being captains and engineers of ships of smaller displacement. As the system of nautical education has since then become more and more perfect and as the number of Japanese trained under that system has increased, there are at

the present time many Japanese sailors as well qualified to manage first class steamers as foreigners.

Training of officers and Men.—The organs now existing for the purpose of training officers and men are the Nautical College conducted under the direct supervision of the Government, Merchant Navigation Schools of a briefer course established under the Technical Education Law, and lastly the Sailors Home.

The Nautical College originated in the Mitsubishi Merchant Navigation School established in 1875 by the Mitsubishi Firm in accordance with the instruction of the Government. It was converted seven years later into a Government institution. The Nautical College trains boys who are to become officers of the highest grade both in the art of navigation and in that of engineering. The graduates are enrolled in the Naval Reserve list, and hence subject to observe the rules enforced in the Naval service.

Sailors Home.—The Sailors Home was established in August of 1880 for the purpose of training officers and sailors and also for according protection to them and their families. The home has been receiving a State Subsidy of 10,000 *yen* since 1896.

Pilots.—Rules relating to pilots and pilotage were first enacted in December of 1876, the rules applicable only to ships of foreign pattern. In consequence of that enactment only properly qualified persons were permitted, as is also the case at present, to discharge the duty of pilots. The existing Pilotage Law that was promulgated in 1899 and it provides that no person not qualified according to the law, may act as a pilot in the pilotage roads; that the pilots must be Japanese subjects who have passed the prescribed examination and whose names appear in the official pilotage list.

Formerly the pilotage licence was granted to people of all nationalities, provided they were qualified according to the Japanese law, but as mentioned above the restriction as to nationality was enforced by the new Pilotage Law, with this reservation, however, that within the limit of five years from the enforcement of that law the Minister of State concerned is entitled to grant the license to properly qualified foreigners. Consequently the pilotage list still contains quite a large number of foreigners. The appended statement will make this point clear :—

PILOTAGE LIST.

Year.	Japanese.	Foreigners.	Total.
1879	1	18	19
1882	5	15	20
1887	4	12	16
1892	6	17	23
1893	7	17	24
1894	8	14	22
1895	9	18	27
1896	9	19	28
1897	8	18	26
1898	6	18	24
1899	5	18	23
1900	5	17	22
1901	7	19	26
1902	8	18	26

IV. LIFE-BOAT PROVISINOS.

The existing legal provisions about life-boat affairs were issued in 1899. The law provides that life-boat matters are dealt with by mayors of municipal or headmen of rural, corporations, and they are entitled, in carrying out the rescue business, to requision the service of men and ships, wagons, horses and other necessary matters. The mayors and headmen have to deal with salvage and to settle expens incidental to the rescue, and they are also under obligation to furnish a rescue report to the captain when the latter makes a request to have it. However when the attempt of rescue fails the expenses required have to be defrayed out of the State Treasury. The Life-boat Law also contains provisions to flotsam and jetsam.

The Japan Life-boat Association was established in November 1889. At first it possessed only two rescue stations, one at Yojima and the other at Tadotsu, both in the province of Sanuki. With the expansion of the scope of the work, and especially since the State decided in 1897 to grant 20,000 *yen* every year, the number of main stations has been increased to 21 with 17 branches and 6 life-boat associations.

V. PROTECTION TO NAVIGATION.

General Remarks.—That the prosperity of Japan is inseparably connected with the prosperity of her carrying trade is a foregone conclusion, considering the situation of the country. Japan therefore has faithfully adhered since 1870 to the national polity of encouraging carrying trade, and especially to maintain an active and efficient ocean service.

Two different systems of protection are adopted in this connection, one being special portection accorded to special service and therefore limited to special kind of shippers while the other is general protection and therefore accessible to all shippers who fulfill certain prescribed conditions. The two systems being therefore distinct in nature and possessing distinct history had better be described under separate headings.

Special Protection.—The protection given for the first time to our shippers was more than special; it was not merely to help their business, it was really to support their very existence. It was with this end in view that in 1870 the Government caused the Reiganjima Navigation Company to run with two steamers a monthly service between Tokyo and Ōsaka. When two years later that company was wound up, and the Japan Mail Steamship Company was created, the Government sold to the new company the steamers it had in its possession and made them to carry on regular coasting services.

After three years this company ceased to exist, but its disappearance did not much affect the prosperity of the maritime business of Japan, for by that time the Mitsubishi Steamship Company had been in existence for some years.

Mitsubishi S. S. Company.

This Company was the next recipient of the Government protection, and had a number of steamers belonging to the Government sold to it in easy terms. The carrying trade of Japan made at the same time a noteworthy departure, for its scope of operation was extended to Shanghai to which a regular service was established. Both on this and also on the regular coasting service the Government granted a certain amount of subsidy.

Kyodo Unyu Kaisha.

In 1882 the Kyōdō Unyu Kaisha (Union Steamship Company) was established and the Government protected its business, on condition that the company would run certain regular service.

Nippon Yusen Kaisha and Osaka Shosen Kaisha.

The amalgamation of the Steamship Company and the Mitsubishi Steamship Company in 1885 and the establishment, as result of this amalgamation, the present Nippon Yusen Kaisha was an occasion of altering somewhat the system of giving protection. The new system consisted in guaranteeing the profit of the company and his was agreed to for fifteen years from the date of the creation of the company. The guaranteeing of the profit was limited within a certain fixed rate of dividend to the paid-up capital of the company. In return for this protection the company was made to open various new regular services, both domestic and foreig. In 1887 the guaranteeing of profit was altered into granting a certain fixed amount of subsidy. In the following year another steamship company, the Ōsaka Shosen Kaisha, was granted a subsidy for eight years for consideration of running regular services on prescribed routes. The subsidy to the two companies ceased with the expiration of the respective contracts, so that this special form of protection is no longer in vogue.

Protection of Foreign Services.—With the discontinuation of this system of protecting certain shippers another and more comprehensive method of encouraging foreign services and of protecting them has been adopted. In pursuance of that policy, protection was granted in 1896 on the Yokohama-Adelaide service; in 1898 on the Shanghai-Hankow, Shanghai-Suchow, and Shanghai-Hangchow services; in 1899 on the Hankow-Ichang services. Those services were somewhat altered soon after, while at the same time several subsidized lines were newly established. The subsidized lines now run by Japanese shippers in accordance with the order of the Minister of Communications are as follows:—

Yokohama-Melbourne, Yokohama-Bombay, Japan-Europe, Hongkong-Seattle-Yokohama-Shanghai, Kobe-North China, Kobe-Vladivostock, Kobe-Otaru, Aomori-Muroran, Hongkong-San Francisco, Shanghai-Hankow, Hankow, Ichang, Kobe-Korea, Shanghai-Suchow, Shanghai-Hangchow, Suchow-Hangchow, Japan Sea.

SUBSIDIZED LOCAL LINES.—Besides, there are other subsidized liner of local importance, these being undertaken under help from the Formosan Government, Hokkaidō Government and Prefectual Governments, as follows :—

SUBSIDIZED BY THE FORMOSAN GOVERNMENT :—Tamsui-Tokosu, Kelung-Kobe (two), Takao-Yokohama, Kelung-coasting, Tamsui-Hongkong, Amping-Hongkong, Fuchow-Hongkong, Fuchow-Santuugao, Fuchow-Hinghwa, Amoy-Shima services.

SUBSIDIZED BY THE HOKKAIDŌ GOVERNMENT :—Nemuro-Hakodate, Nemuro-Shana, Nemuro-Abashiri, Otaru-Wakanai, Wakanai-Abashiri, Hakodate-Otaru, Otaru-Teshio, Hakodate-Otsu, Ishikari river services.

SUBSIDIZED BY PREFECTURAL GOVERNMENTS CONCERNED :—Ogasawara group (4), Oshima group (Kagoshima), Oki group and main island, Sakijima (Okinawa), Okinawa islands services.

GENERAL PROTECTION.—Besides the protection given to special routes for maintaining regular service necessary for keeping up regular facilities of conveyance and intercourse, protection is extended, in accordance with the Law of Encouraging Navigation, to service of other descriptions irrespective of shippers or routes, with the object of furthering in general the cause of general shipping trade. This protection in the form of subsidy is given to all those services which satisfy the conditions specified in the law in question. To be more in detail, the law subsidises steamers which come up to the standard mentioned in the provisions and which carry on regular service between Japan and foreign coast or along the coast of foreign countries. The subsidy is at the rate of 25 *sen* per ton per 1,000 miles covered, and for steamers that are not less than 1,000 gross tonnage capable to develop the speed of 10 knots per hour. The rate increases with an increase of tonnage and speed.

RETURNS RELATING TO GENERAL PROTECTION.—The number of steamers, gross tonnage and the distance traversed by them since the law was put into operation are given in the appended table :—

Fiscal Year.	Number.	Gross Tonnage.	Distance Traversed. Miles.
1879—...	11	48,596	251,740
1898—...	24	115,102	771,647
1899—...	29	130,461	1,164,708
1900—...	18	74,530	543,906
1901—...	15	57,199	471,321
1902—...	15	49,446	477,561

VI. NAUTICAL SIGNALS.

General Remarks.—It was in May of 1866 that Japan agreed in accordance with Art. XI of the tariff convention concluded with Great Britain, France, United States of America, and Holland to construct after foreign style nautical signals in the vicinity of the open ports. To fulfill this agreement the Government of the day purchased from England a set of necessary lighthouse materials, and also engaged an expert from the same country.

Kinds of Signals.—The nautical signals of Japan are divided according to construction and method of maintenance into three classes, namely, Government, communal and private. The private signals numbered over 100 formerly, but they were far from satisfactory in construction and working. At last the Government decided to prohibit the building of signals by private individuals in 1885, and a notification to that effect was issued in that year. It was provided that the construction of new private signals for the use of public would be prohibited in the future; that the old signals that had not been exacting due should be discontinued by 1895; that the due-collecting signals the establishment of which was permitted for a specified period should be stopped on the arrival of that period, and finally for other signals of the same kind that had no fixed period of existence such period should with the approval of the supervising authorities, be determined. Even at present, therefore, more or less private signals exist.

On the other hand the number of signals constructed and maintained by civic corporations is gradually increasing as is also the case with the Government signals.

Number of Signals.—The appended table will explain the condition of the work since 1869 when Japan constructed for the first time nautical signals after Western pattern. Here is the table:—

Year.	Government.	Communal or Private.		Total.
1869	9	108		117
1872	32	101		133
1877	55	100		155
1882	66	145		211
1887	78	140		218
1892	106	35	89	230
1898	140	45	21	206
1902	172	53	15	240

VII. OPEN PORTS.

NUMBER OF THE PORTS.—At present there exist 30 ports open to foreign trade, these being Yokohama, Kobe, Nagasaki, Hakodate, Niigata, Ebisu, Osaka, Shimizu, Taketoyo, Yokkaichi, Itozaki, Shimonoseki, Moji, Hakata, Karatsu, Kuchinotsu, Misumi, Izuhara, Sasuna, Shikami, Naba, Hamada, Sakaye, Miyazu, Tsuruga, Nanao (southern basin), Fushiki, Otaru, Kushiro and Muroran. With the object of maintaining order and tranquility in such of the ports having busier shipping traffic Harbor Regulations were issued in 1898. Three ports of Yokohama, Kobe and Nagasaki were at once placed under this legislation, which was also extended two years later to Moji.

SHIPPING RETURNS OF THE FOUR PORTS.—The number of ships, both Japanese and foreign, that have entered and cleared those four ports since the enforcement of the regulations is given in the appended statement:—

Year.		Yokohama.		Kobe.		Nagasaki.		Moji.	
		No.	Tonnage.	No.	Tonnage.	No.	Tonnage.	No.	Tonnage.
1898	Japanese.	1,012	1,357,005	4,178	2,415,124	906	720,963	—	—
	Foreign.	238	872,258	291	1,039,687	292	846,185	—	—
1899	Japanese.	2,080	3,009,340	10,261	6,036,509	2,120	1,734,939	—	—
	Foreign.	522	1,986,342	723	2,808,642	729	2,422,103	—	—
1900	Japanese.	2,050	2,743,196	10,682	5,917,988	1,775	1,648,924	2,161	1,945,256
	Foreign.	570	2,286,083	752	3,110,569	871	3,254,457	313	959,215
1901	Japanese.	2,129	3,194,064	11,400	6,658,896	1,807	1,793,070	14,336	7,101,179
	Foreign.	554	2,360,712	722	3,194,738	749	2,773,739	839	2,703,187
1902	Japanese.	2,156	3,308,779	11,653	7,147,892	2,241	2,040,934	15,172	7,112,140
	Foreign.	565	2,466,958	784	4,442,540	687	2,668,478	799	2,514,639

PART VIII.

EDUCATION.

Introductory—General Education—Higher Education Technical Education—Libraries.

I. INTRODUCTORY.

In the Pre-Restoration days.—Education in Japan dates from remote antiquity, and the national traits of faithfulness, filial piety, as well as valor have received from education a powerful stimulus. Intercourse with China and Korea naturally left on our educational system a peculiar stamp of its own, and Japan owed very much to these two neighbors in respect of her science and art. Whatever may have been the moving force of our education in its early stages, there exist ample authentic evidences attesting how even in ancient times culture and learning attained a high degree of development. Then followed centuries of intellectual retrogression occasioned by the incessant civil strifes of the "Middle Ages," to be succeeded by the revival and renaissance of the period of the Tokugawa. It ought to be remembered, however, that education as it was known prior to the Restoration was extremely narrow in scope and limited in operation. In fact it practically consisted in belles-lettres and what are called humanity studies, the latter based on the Chinese and Japanese classics. It has been only since the Restoration that education in its modern sense has first been planted on our soil and that the system has been subjected to a thorough change.

After the Restoration.—True to national tradition, the Government bestowed special attention on matters of education, and in the very first year of the era several institutions were either

created or thoroughly re-organized. The year 1869 saw the establishment of an Imperial University, while two years later educational affairs were entrusted to an independent Department of State. Next year the educational system was drawn up and proclaimed, and the utmost efforts were made to promote the cause of general and higher education. Since then, in accordance with the requirements of the times, amendments of the system and improvement of the arrangement have been carried out frequently, till we witness the very full provisions as are existing to-day. In describing the existing educational system, a brief survey of the administrative organizations bearing upon it should first be given.

Educational Administration.—The Department of Education superintends the educational affairs of the country besides maintaining institutions essential for the State. In a similar way each local office superintends the educational affairs in its own jurisdiction and maintains at its own expense the schools required in it, and this remarks also applies to each district, municipal or rural corporation. The institutions maintained by the Department are called Government institutions while those maintained by local, district or corporation expenses are called public or communal schools. The latter are of two kinds, one of them established in conformity with the order of the Government and the other established at the initiation of the body public concerned. Normal schools, middle schools and higher girls' schools are schools which the provincial offices are obliged to maintain in their jurisdiction, the number to be one or more according to cirumstances. The schools which a municipal or rural corporation is under obligation to maintain are primary schools. All the other kinds of schools maintained by all these public bodies are maintained by such bodies of their own accord and of course with the approval of the central Government.

Besides, there are schools established by private individuals on their own account, and these are called private schools.

Being under the direct control of the Department of State, all matters relating to the establishment or abolition or re-organization of the Government institutions are solely determined by the Department, while all matters relating to the establishment or discontinuation or re-organization of prefectural schools are carried out

by the respective prefectural offices with the approval of the Minister of Education, while the appointment or relief from office of directors and teachers is made by the prefectural Governors concerned. It ought to be added that the directors of normal schools are civil officials of the higher civil service. Matters relating to schools maintained by districts and municipal or rural corporations are carried out with the approval of the Minister of Education, when they relate to the establishment, abolition or re-organization of higher girls' schools, middle schools and technical schools. The prefectural Governors concerned arrange on their own sole responsibility all those matters relating to schools of other descriptions. Similarly matters relating to the establishment, abolition or re-organization of private schools are dealt with by the prefectural Governors as in the case of district or communal schools.

Government schools are allowed, in accordance with the Law of Special Finance, to set apart as permanent funds of the schools, the income and other receipts, and in a similar way public or communal schools are allowed to create their permanent funds by setting apart their income of whatever description.

Matters relating to the establishment, abolition or re-organization of kindergartens, or public libraries as also to the appointment and relief from office of the staff thereof are generally dealt with according to the corresponding process of the schools mentioned above. Then in case private individuals apply to the authorities for permission to establish and maintain at their own expense schools, kindergartens, or public libraries, the Minister of Education or the prefectural Governors concerned give permission when they judge that such permission should be accorded. Those private institutions then receive similar treatment and privilege as public institutions of the corresponding character.

The qualifications of the members on the staff of the Government schools are determined according to that section in the Civil Appointment Regulations that relates to teachers, while the qualifications of public or private schools are limited only to those who possess the license granted either by the Minister of Education or by local Governors, according to the kind of the schools. The teachers of both the Government and public schools are entitled to

a pension either for themselves or to their families, in accordance with the respective legislative measures provided for the purpose.

The administrative affairs relating to education are, as described above, taken charge of by the Department of Education, prefectural offices, district offices and civic corporations. In the Department of Education several bureaux and sections are established to deal with educational affairs, and, besides, school-inspectors are appointed to inspect the condition of the schools throughout the country. The prefectural offices also keep their own school-inspectors and assistant school-inspectors are appointed or relieved of office as officials of the higher civil service. The district also keeps its own inspectors to superintend its education, but in civic corporations this duty is undertaken by officials who have to attend to it as additional function.

Appended is a table showing the condition of the various educational institutions existing at the end of 1901 fiscal year:—

SCHOOLS.

Kind of Schools.	Government.	Public.	Private.	Total.
Primary	2	26,659	349	27,010
Blind and Deaf-and-Dumb ...	1	1	13	15
Normal	—	54	—	54
Higher Normal	2	—	—	2
Middle	1	207	34	242
Higher Girls...	1	61	8	70
High	8	—	—	8
Universities	2	—	—	2
Special	8	4	45	57
Technical	9	365	27	401
Others	—	274	1,200	1,474
Total	34	27,625	1,676	29,335

PROFESSORS AND TEACHERS.

Kind of Schools.	Government.	Public.	Private.	Total.
Primary	38	101,551	1,111	102,700
Blind and Deaf-and-Dumb ...	15	17	47	79
Normal	—	1,032	—	1,032
Higher Normal	118	—	—	118
Middle	29	3,526	678	4,233
Higher Girls...	18	807	133	958
High	282	—	—	282
Universities	327	—	—	327
Special	227	78	896	1,201
Technical	250	1,784	202	2,236
Others	—	191	4,747	4,938
Total	1,304	108,986	7,814	118,104

STUDENTS AND PUPILS.

Kind of Schools.	Government.	Public.	Private.	Total.
Primary	1,091	4,923,270	56,243	4,980,604
Blind and Deaf-and-Dumb ...	238	215	344	797
Normal	—	17,982	—	17,982
High Normal	860	—	—	860
Middle	340	72,823	15,228	88,391
Higher Girls	325	14,975	2,240	17,540
High	4,361	—	—	4,361
Universities	3,612	—	—	3,612
Special	3,314	1,462	13,112	17,888
Technical	2,121	31,954	2,702	36,787
Others	—	13,062	83,122	96,184
Total	16,262	5,075,743	173,001	5,265,000

GRADUATES.

Kind of Schools.	Government.	Public.	Private.	Total.
Primary	277	841,540	8,553	850,376
Blind and Deaf-and-Dumb ...	32	9	14	55
Normal	—	9,216	—	9,216
Higher Normal	176	—	—	167
Middle	52	6,904	2,540	9,496
Higher Girls	64	2,778	812	3,654
High	756	—	—	756
Universities	671	—	—	671
Special	515	253	1,718	2,486
Technical	423	5,286	347	6,056
Others	—	1,590	17,095	18,685
Total	2,966	867,576	31,079	901,621

II. GENERAL EDUCATION.

A. Kindergartens.

The first kindergarten in Japan was established in Tokyo in 1876. The number has since been considerably increased, so that at present every province has one or more kindergartens. The necessity of an institution for the training of qualified nurse having come to be felt, a nurse course was newly

opened in 1878 in the kindergarten affiliated to the Tokyo Womens' Normal School. The example set in Tokyo has since been followed in many provinces.

According to the existing provisions the number of children to be taken into a kindergarten is limited to 100, which number could in special circumstances be increased to 150. Each nurse has to take charge of not more than 40 children. According to the inquiries instituted at the end 1901 fiscal year, there were 254 kindergartens throughout the country and they comprised one Government establishment, 181 public establishments, and 72 private establishments. The number of nurses totalled 671 of which six were in Government establishments, 496 in public institutions and 169 in private establishments. The pupils numbered 23,671.

B. Primary Schools.

History.—Family schools and schools maintained by the local feudal fiefs were in olden days the seats of learning, the former being mostly for children of the plebeian class and the latter for those of the *samurai*. The schools maintained by the fiefs taught first of all Chinese classics, then penmanship and arithmetic while the humbler schools taught penmanship, reading and counting. The education in those days was, therefore, far from perfect, absolutely speaking, but such as it was it satisfied the requirements of the time, and, especially as it was supplemented by the influence of a rigid domestic education, it attained the principal end of education, that is, it formed character and it supplied culture.

Not a few primary schools based somewhat on the Western model were established soon after the Restration, but it was not till 1871 that schools of this grade, based on an entirely new system began to make their appearance. In that year the Department of Education brought under its direct control the six primary schools in Tokyo and at the same time it distributed among all the places throughout the country the rules put in force in those six schools. In the following year the school system was elaborated and the whole country was divided into 53,760 primary school sections each with one primary school. This elaboration of the system marks the new era in our education, for it was followed by the creation for the first time of communal and public primary schools.

The system underwent amendments and revisions on many occations, the last change taking place in 1900. That change was caused by the existing Primary School Law. At the same time rules for putting it in operation were promulgated.

Kinds of Schools.—Primary schools are divided into ordinary primary schools and higher primary schools. The two may either exist separately or in combination, in which latter case the schools are called ordinary and higher primary schools.

The term of an ordinary primary school extends four years and that of a higher primary school two to four years according to circumstances. The subjects taught at the ordinary primary schools are morals, reading, arithmetic and gymnastics. Drawing, singing or hand-work, either one or more, may be added according to local circumstances, while for girls a sewing lesson may be added. The subjects at the higher primary schools comprise morals, reading, arithmetic, history, geography, science, drawing, singing and gymnastics. For girls the subject of sewing may be added. For a higher primary school of two year course either science or singing or both may be dispensed with, or a lesson on hand-work may be added; for one of three year course the subject of singing may be dispensed with and on the other hand elementary lesson in agriculture, hand-work or business, may be added. Lastly the lesson in English may be added to the curriculum of the four year course in higher primary school.

At both ordinary and higher primary schools a continuation course may be established for the benefit of those who have graduated from the prescribed course of study, the term of this course not to exceed two years. The programme of study is different according to local circumstances.

The text-books used by primary schools are selected by local text-book committees from among the text-books compiled by the Department of Education or those prepared by private individuals and contained in the approved list. The selection is determined on the approval of the local Governors concerned. As a rule a text-book adopted has to be used for four years, after which the selection is to be made anew.

School Attendance.—The school-age of children extends eight

years commencing from the age of full six years and ending at full fourteen. Parents or those who act for them are under obligation to send to school the children who have reached the school-age, the sending to commence at the beginning of the first school year after the attainment by the child of its school-age. It ought to be added that those who engage children who have not completed the course of elementary education are ordered not to object to those children attending school.

Establishment, Maintenance, Fee.—A municipal or rural community is under obligation to establish and maintain one or more primary schools sufficient to admit children of school-age residing in its jurisdiction. When, however, a rural community is judged to be incapable of bearing this obligation alone, it may enter into an agreement with another community placed in proximity and they may both maintain one primary school in common. Then, in case of the scarcity of children sufficient to form one school, a village may entrust the schooling of its children to a neighboring village possessing one.

The expense required for establishing and maintaining a school must be paid by the corporation concerned, but when a rural corporation is judged to be unable to pay the whole cost the district in which it is contained may give a suitable amount of grant-in-aid. In the case of a district unable to discharge this duty or in the case of a municipal corporation unable to pay the cost required for primary schools, the obligation of making good the deficit devolves on the local treasury.

No primary school can exact a fee from its pupils, unless special circumstances exist to allow it, with the approval of the local Governor, to collect the fee. The amount of this fee may not exceed for ordinary primary schools 20 *sen* a month in the case of a school existing in a municipal district, and 10 *sen* in the case of a town or village school. For a higher primary school the amount may not exceed 60 *sen* a month in the case of a municipal school and 30 *sen* in the case of a town or village school. Children of poor families unable to pay the fee may be exempted either entirely or in part. The fee may also be reduced for a family sending more than two children at the same time.

Teachers.—There are three kinds of teachars, regular licensed teachers who are qualified to teach all the subjects in the regular coures, special teachers who have to undertake the teaching of special subjects such as drawing, singing, sewing, English, agriculture, etc. Lastly there are assistant teachers who assist the regular licensed teachers.

Teachers must have a regular license which is of two kinds, one being good for all the country and the other good for only one particular locality. The latter, called a "prefectural licence," is granted by the local authorities to those who have graduated from the prefectural normal school or other schools approved of by the Minister of Education, or those who have passed the prescribed license examination. The other license called "national license," is granted to those teachers of distinguished service who have been in the service for more than ten years; also those who, after having graduated from a higher normal school, have served not less than three years as regular licensed teachers in a city or rural primary school. This license is also granted to those who have graduated from a special course of study at a school approved by the Minister of Education, provided they have been on the teaching staff of a primary school for not less than three years.

Treatment of Teachrrs.—There is fixed schedule of salary for primary school teachers. This extends between the minimum of 6 *yen* and the maximum of 20 *yen* for an assistant teacher, the corresponding limit being 8 to 40 *yen* for a special licensed teacher, and 10 to 75 *yen* for a regular licensed teacher. The maximum for the last kind of teacher may be increared to 100 *yen* provided the teacher in question has rendered distinguished service to the cause of education. Further, special allowances of greater or less amount may be granted to those who undertake to teach more than 30 hours a week, while under no circumstances is the salary of a teacher reduced without his consent.

In the case a teacher dies while on active service or after he has retired, a sum of money corresponding to three times the salary he had drawn the month preceding his death, is given to his family. A special allowance over and above that sum may be granted in the case of a school-master or teacher who has rendered distinguish-

ed service. A school-master or teacher who has sustained injury or contracted disease in the discharge of his duty is allowed his medical expenses. In general, according to local circumstances, houses may be provided or house-rent granted to school-masters or teachers.

A regular licensed teacher of meritrious service who has been on the service for more than five years in one and same province receives an additional allowance of 24 *yen* a year and an assistant teacher similarly qualified receives an allowance of 18 *yen* a year. For every additional five years a regular teacher gets an extra 18 *yen* a year and an assistant 12 *yen*.

A licensed teacher who undertakes the teaching of a single-class primary school may receive an extra allowance of 24 *yen* a year, and in a similar way a teacher discharging service at a multiple-class school situated in a remote district may get extra allowance of 18 *yen*.

The outlay involved in those special allowances described above is to be disbursed by the National Treasury in accordance with the Law relating to State Aid to Primary School Teachers.

School Statistics.—According to the returns compiled at the end of 1901 fiscal year there were 20,284 primary schools throughout the country together with 6726 branches, making a total of 27,010. Teachers on duty numbered 102,700 and pupils in attendance 4,980,604. The ratio of daily attendance was 85.50 per 100 on the school record. Ordinary primary schools provided with the continuation course numbered 2,113 and higher primary schools possessing similar accommodations 26, making a total of 2,339. The children of school-going age numbered 7,566,886 of which 6,487,499 reached the limit of attendance, the remaining 969,397 not reaching that limit. The ratio of attendance per 100 children who reached the limit of attendance was 93.78 for boys and 81.80 for girls, the average being 88.05.

C. Blind and Deaf-and-Dumb Schools, Normal Schools etc.

1. Blind and Deaf-and-Dumb Schools.—It was in 1878 that a blind and deaf-and-dumb school was first established in Japan. It was established at Kyoto by private individuals. It ought to be added, however, that even before the Restoration there were provisions for teaching the art of acupuncture and shampooing to the blind who

were thus provided with a means of earning a livelihood. The teaching, however, was simple and hardly deserved the name of education as the term is understood to-day. The first blind and deaf-and-dumb school mentioned above was subsequently converted into a municipal institution, and, owing to the grant of money and building made to it by the Imperial Court, it has been considerably expanded in scope. The school is now known by the name of the Kyoto Municipal Blind and Deaf-and-Dumb School.

Following the worthy example set by the people of Kyoto, the citizens of Tokyo also established in 1880 a similar institution of their own, which was transferred to the management of the Department of Education. Under the new management the school has very much enlarged its scope, and it is now a model institution of its kind.

The Tokyo Blind and Deaf-and-Dumb School is divided into two departments, ordinary and technical. The blind students in the ordinary course are taught reading, arithmetic and oratory, and those in the technical course music, acupuncture and shampooing. The deaf and dumb students in the ordinary course are taught reading, penmanship, composition, arithmetic, also written conversation and gymnastics. In the technical course they are taught drawing and painting, sculpture, cabinet-work and sewing. In general every student is made to attend to the ordinary course and to one or more subjects in the technical course; but, according to the request of the parents, this arrangement may be somewhat modified. The term of study lasts three years for blind students learning shampooing and for others it lasts five years. According to the returns made in March 1902 blind and deaf-and-dumb schools both Government and private numbered fifteen, with 79 teachers and 797 students.

2. Normal Schools:—In 1872 a normal school was established in Tokyo and for the first time a provision for training primary school teachers was created. The schools that had previously existed were private schools or family schools and no institution existed for giving special instruction and training for teachers. In the following year six Government normal schools were established at so many different places, while at the same time a women's normal school was established in Tokyo for training women teachers. In 1875

each prefecture was made to establish its own normal school, and in 1877 the Department of Education announced that it would disburse 50,000 *yen* a year as grant-in-aid to all the prefectural normal school expenses throughout the country. The sum was increased to 70,000 *yen* during the subsequent three years.

With the appearance of prefectural normal schools the Government normal schools that had previously created ceased to exist, and only the Tokyo Normal School and the Tokyo Women's Normal School were left remaining to serve as models for prefectural normal schools. Shortly after a special course for training middle school teachers was established at the Tokyo Normal School.

In 1886 the Normal School Regulations were promulgated, providing that the normal schools should be divided into higher and ordinary normal schools, the former, one in number and that one located at Tokyo, to be placed under the direct control of the Minister of Education, and the latter, one in every province, to be controlled by the local Office. In 1897 the regulations in question were superseded by new regulations, the provisions of the two legislative measures however remaining practically identical in the main.

To describe the system of ordinary normal schools as they exist at present, these institutions are schools where those who wish to become primary school teachers are trained. Each prefecture must have at least one normal school which may be divided into male and female departments. In some prefectures independent female normal schools are established. All these schools are under the control of the respective local Governors and the expenses required are paid out of the local treasury. The school expenses of the students are supplied by the same treasury, and in return for this help the students are obliged to give their services at one or another primary school in the prefecture, for ten years in the case of men and five years in the case of women. The schools may also keep students who pay their own school expenses.

In March, 1902, 54 normal schools existed throughout the country with teachers numbering 1,032 and with students of three different courses (main, brief and preparatory) totalling 13,900 and those of training course 4,082.

Each normal school has subjoined to it a model primary school,

which at the same time serves the purpose of giving to the students practical experience in teaching. Further, to give similar opportunities to the girl-students and students of kindergarten nurses, a kindergarten is also provided at some normal schools.

3. Higher Normal Schools.—Higher Normal Schools are places where teachers qualified to teacher at normal schools, middle schools and higher girls schools are trained. There are two higher normal schools, one at Tokyo and the other at Hiroshima. Placed under the control of the Minister of Education, the outlay is paid out of the State Treasury, while the school expenses of the students are supplied by the respective schools. In return for this help, the students are under obligation to attend for ten years to the work of education at places specified by the Government.

4. The Higher Women's Normal School.—This school trains female students who are to become teachers of normal and higher girl's schools. The Tokyo Higher Women's Normal School is the only institution of this kind existing in Japan. The school is managed by the Minister of Education and the schooling expenses of the students are paid by the school. The students are therefore under obligation to attend to work of education for five years from the date of their graduation.

5. Middle Schools.—Established for the first time in 1872, the middle schools as originally arranged were schools where boys intended for business or who aspired to enter higher institutions were taught. The regulations provided two kinds of middle schools, ordinary and higher, the former established in the provinces and therefore prefectural establishments and the latter Government schools established at important local centres. The regulations that are now in force are those amended in 1901. They provide that one or more middle schools are to be established in every prefecture, the exact number to be determined according to local requirements. The outlay is of course to be met out of the local treasury. A district or a rural or municipal corporation may establish either singly or in combination a middle school of its own, but only when such establishment does not interfere with the work of primary education. Private individuals may also establish a middle school in conformity with the regulations.

In general the number of students of one middle school is fixed at not more than 400 which number may be raised to 600 under special circumstances. A single class must not contain more than 50 students, and the number of teachers must be at the rate of at least two per class for a school containing not more than five classes. For every additional class above five the number of teachers must increase at the rate of 1½ per class.

6. Higher Girl's Schools.—In 1872 one girl's school was established in Tokyo and another in Kyoto, the former being a Government and the latter a prefectural institution. Similar schools have been created in almost every prefecture and district throughout the country. Indeed the Higher Girl's School Regulations enacted in 1889 made the establishment of this kind of school in the provinces compulsory. The regulations now in force were those revised in 1901. They provide that a higher girl's school give general education of a higher class to girls, and that one or more schools be established and maintained. Provisions similar to those for middle schools apply in the case of communal schools or schools established and maintained by private individuals.

III. HIGHER EDUCATION.

1. The Imperial Universities.—The Imperial Universities, one in Tokyo and the other in Kyoto, are maintained by the State Treasury in accordance with the Imperial Universities Regulations.

a. The Tokyo Imperial University—.The Tokyo Imperial University, which consists of the defunct Tokyo University, the Engineering College (created in 1885) and the Tokyo Agricultural and Dendrological College (affiliated in 1890), had its origin in the "Institute of Western Knowledge" that existed in the latter days of the Tokugawa Shogunate. It was transferred to the control of the Department of Education of the rehabilitated Imperial Government in 1871. The Tokyo Medical College was united to it six-years after and with this union the name was again changed to the Tokyo University.

The University comprises six colleges, namely Law, Medicine, Engineering, Literature, Science, and Agriculture. The College of

Law is subdivided into two courses, that of law proper and that of politics; and in the same way the College of Medicine consists of the courses of medicine and pharmancy. The College of Engineering consists of nine courses; namely, civil engineering, mechanical engineering, shipbuilding, electric engineering, technology of arms, architecture, chemical technology, technology of explosives, mining and metallurgy. The College of Literature includes philosophy, Japanese classics, Chinese classics, Japanese history, general history, philology, English literature, German literature, and French literature. The College of Science is made up of eight courses, mathematics, astronomy, pure physics, chemistry, zoology, botany, and geology. Lastly the College of Agriculture comprises the courses of agriculture, agricultural chemistry and veterinary medicine.

The number of chairs is 29 for the College of Law, 27 for the College of Medicine, 29 for the College of Engineering, 21 for the College of Literature, 21 for the College of Science, and 22 for the College of Agriculture.

The students who have finished the University preparatory course in a High School are admitted to colleges of their own choice. When, however, the number of candidates is in excess of the accommodation in a given college than admission is made by competitive examination. In case the number of applicants for admission falls short of the number of places vacant, the deficiency may be filled up with the graduates of schools judged by the Minister of Education to be of equal standing with the University preparatory course or those who have passed the examination arranged by the colleges concerned and conducted at the respective High Schools, the examination to be suited to the scholarship of the Schools.

The term of study is not fixed for the College of Law, the diploma being given to those who have passed four academic examinations. In the course of pharmacy of the College of Medicine it lasts four years while in all the other colleges it is three years.

Besides the regular courses mentioned above there is a post-graduate course, the term of which lasts five years. This special establishment is known by the name of "University Hall." The students of Law studying at the Hall are precluded during the first

two years from attending to any work not connected with the subject of their special study: and the students of Literature may not attend to any work not connected with their study, unless with the consent of the College of Literature. These two kinds of Hall students are also prohibited from residing elswhere than in Tokyo. The Hall students of Medicine. Engineering, Science and Agriculture are under obligation to devote themselves for the first two years to their respective courses of study; nor may they attend to work not connected with the subjects of their study unless with the consent of the Deans of their respective colleges. At the end of the two years the students have to report to their Deans the progress they have made in studies. This report is to be submitted at the end of every year by the students of Law and Literature studying in the Hall. The reports are then submitted by the Deans to the examination of the faculty meeting.

Those students of the Hall who wish to obtain the degree of "Hakushi" shall submit at the end of the prescribed five years to the Deans an essay on their special subject of investigations. A committee will be elected from among the members of the faculty to examine the essays submitted. The applicants for the degree may be required to undergo examination when it is judged necessary by the Committee.

The provisions apart from class-rooms are the library for the whole University; hospital with all the accommodations pertaining thereunto for the College of Medicine; the historigraphical works and reports of linguistic investigations of the Japanese language for the College of Literature; the Tokyo Observatory for the College of Science, the Observatory undertaking astronomical observations and the compilation of almanacs. The same College has also attached to it the botanical garden, seismic observatory, and marine laboratory, while the College of Agriculture has a nursery bed, veterinary hospital, orchard, and training forests.

At the end of March, 1902, the faculty of all the University Colleges comprised 104 professors, 51 assistant professors, 72 lecturers, and 18 foreign professors, making a total of 245. The alumnii as computed from the foundation numbered 1,336 for the College of Law, 715 for the College of Medicine, 1,072 for the College of

Engineering, 542 for the College of Literature, 380 for the College of Science, 481 for the College of Agriculture, in all 4,521. The students numbered 467 for the University Hall, 969 for the College of Law, (besides 26 in the elective course), 398 for the College of Medicine (besides 124 in the elective course), 421 for the College of Engineering (besides 6 in the elective course), 285 for the College of Literature (besides 17 in the elective course), 65 for the College of Science (besides 3 in the elective course), 65 in the College of Agriculture (besides 275 in the practical course), in all 3,121 classified into 2,670 students proper and 451 students in the elective and practical course, including 11 foreign students.

b. The Kyoto Imperial University.—Established at Kyoto in June 1897 by Imperial Ordinance, the University had at first only the combined College of Science Engineering. In July 1899 the Colleges of Law and of Medicine were added. The Collegiate provisions are not in conformity with the Imperial Ordinance relating to Universities, so that the University possesses only the Colleges of Law, Medicine, and Science and Engineering, no College of Literature yet existing.

The College of Law comprises the two courses of Law and Politics, the College of Medicine contains only the one course of Medicine, and the College of Science and Engineering the following eight courses; viz., mathematics, physics, pure chemistry, chemical technology, civil engineering, mechanical engineering, electric engineering, and mining and metallurgy. The qualification for admission is equal to that for the Tokyo Imperial University. The term of study extends three years for the Colleges of Law and Science and Engineering, and no students are allowed to remain in one course for more than six years. The term for the College of Medicine lasts four years, and no student may remain in it for eight years or above.

Outsiders may attend lectures in one or more subjects at a college when there is room for them.

In the College of Medicine licensed practitioners may be admitted as elective students. Their term may not exceed one year. The number of chairs is 24 at the College of Law, 27 at the College of Medicine, and 26 at the College of Science and Engineering.

2. Higher Schools.—There are eight Higher Schools, respectively designated the First to Sixth Higher Schools, the Seventh Zōshikan Higher School and the Yamaguchi Higher School. They are all Government institutions. The First Higher School is located at Tokyo, the Second at Sendai, the Third at Kyoto, the Fourth at Kanazawa, the Fifth at Kumamoto, the Sixth at Okayama and the Seventh at Kagoshima. The Yamaguchi Higher School is at Yamaguchi.

The Higher Schools were formerly called Higher Middle Schools and in 1886 five such schools were created at so many places, and gave instruction to those young men who wished to enter the University or to enter business. The schools were allowed to establish courses on law, medicine, engineering, literature, science, agriculture and commerce. The courses of medicine were in general separate establishments. At the same time there were the Yamaguchi Higher Middle School and Zōshikan Higher Middle School which were originally founded by private individuals but were placed under the control of the Government.

In 1894 the Imperial Ordinance relating to Higher Schools was issued to supersede the Higher Middle School Regulations, and the new title of Higher School was given to those institutions. According to the regulations, the main object of the Higher Schools was to teach the students on special subjects, and to give at the same time and subordinate to this main work, a preparatory education for those who aspired to enter the university. The Third Higher School which previously opened the law course in 1889 established the engineering course in 1894, and the Fifth Higher School opened that same course at the same time. In 1895 the Kagoshima Zōshikan High School was abolished, and it was announced that the special course of study established at the Third Higher School would be closed by 1900. In that year the Sixth Higher School and in the following year the Seventh Zōshikan Higher School were founded. In the same year the medical departments attached to the First to the Fifth Higher Schools were completely separated and converted into special medical schools.

3. Special Schools of Medicine.—The Medical Schools are situated in Chiba, Sendai, Okayama, Kanazawa, and Nagasaki.

They were formerly medical departments of the Higher Middle Schools and the Higher Schools. In April 1901 they were converted into independent institutions. Prior to the detachment, a course of pharmacy was added to each medical department. The Special School of Medicine is connected with the prefectural hospital of the place where it is situated, and the students are thus given opportunities of acquiring experience and of attending to clinical lectures.

4. The Tokyo Fine Art School.—This school was established in November of 1888 though strictly speaking this was not the first art institution in Japan, for as early as 1876 an art school was established by the Department of Public Works and students were taught on the subjects of painting and sculpture. In 1884 the Committee for the Investigation of Drawing was appointed in the Department of Education and in the following year Commissioners on painting and drawing were appointed. Both the Committee and Commissioners were made to carry out inquiries into the subject of art education with special bearing on painting. The inquiries resulted in the creation of the Tokyo Fine Art School, and it was opened for work in 1889. The course of study was divided into two departments, one being the ordinary course lasting two years and the other the special course lasting three years. The practical education in the former consisted of instruction in painting and moulding while in the other it consisted of painting, sculpture, and applied art, the last divided into metal-work and lacquer-work. The organization has since been changed several times, with the result that the school has finally attained its present state of comparative perfection. At present the school consists of four departments; namely, painting, design, sculpture, and applied art, the last divided into glyptic art, metal-laying, metal-casting, and lacquer-work. Architecture is lacking for the present. The course of study lasts four years in each department, and there is one year of preparatory study in each department.

5. The Tokyo Foreign Language School.—This school was at first established in April of 1897, as an institution affiliated to the Higher Commercial School. Two years later it was separated and made an independent school under the above-mentioned title.

The school has a precursor which existed as early as 1874. In that year the two courses of English and French that formed part of the then University Institution and the Language School in the Foreign Office teaching German, Russian and Chinese were combined under the name of Tokyo Foreign Language School. At the same time the Tokyo English Language School was founded and the department of English in the Foreign Language School was transferred to it. In 1880 the department of the Korean language was created, while in 1884 the Higher Commercial School was founded, subordinate to the Language School. Next year the Language School and the Commercial School were combined into one institution bearing the title of the Tokyo Commercial School. Two years later the department relating to foreign languages was abolished. Eleven years later the school was resuscitated, as described before. The present school contains the eight departments of English, French, German, Russian, Spanish, Chinese, and Korean. The course of study extends for three years.

6. The Tokyo Music School.—The appointment in the Department of Education of a number of Commissioners on music in 1879 was the origin of this school. In the following year a music teacher was engaged from America. He and some Japanese experts were made to carry out an investigation on matters musical both foreign and Japanese, and especially on the songs and arts that had previously existed in our country. Those that were available were set to music with or without modification, while some new airs were composed, and for the first time the adapted music was taught to the students of the Tokyo Normal School, the Tokyo Women's Normal School, and the Peer's School. A number of students were also taken by the Commissioners, and those students may be regarded as the first regular music students in Japan. In 1887 the scope of the education was enlarged, resulting in the creation of the Tokyo Music School. In 1893 the School was subjoined to the Higher Normal School, to be again converted into one independent institution in 1899.

The school contains five different departments namely, the preparatory department, the main department, the special department, the teachers' department, and the elective department. The main

department is further subdivided into the vocal course, instrument course, and singing course. The teachers' department is also subdivided into *A.* section and *B.* section, the former to train teachers qualified to teach in normal or middle schools and higher girl's school, the latter in primary schools. The term of study lasts one year for the preparatory department, three years for the main department, two years for the special, two years and seven months for *A.* section teacher's course and one year for *B.* section. The term for the elective department is not definitely fixed.

IV. TECHNICAL EDUCATION.

General Remarks.—The importance of encouraging technical education was early recognized by the Government, especially in recent times. The promulgation in 1894 of the Rules relating to Apprentice Schools, of the Rules relating to Agricultural Schools in 1883, the Rules of Elementary Agricultural Schools in 1894 may be mentioned among the legislative measures pertaining to industrial education. In a similar way the Rules relating to Commercial Schools were issued in 1884 while the Rules relating to Technical Continuation Schools were issued in 1893, this latter kind of school being intended to give technical education of secondary or lower grade. The cause of technical education received in 1894 powerful encouragement, for in that year the Law for subsidizing Technical Education was passed, by which law the State pledged itself to give grant-in-aid to technical schools judged useful for promoting technical education. At first the sum set apart on this account by the Treasury was 150,000 *yen* a year, but this has been gradually increased with the expansion of this particular branch of education and at the present time the outlay amounts to 320,000 *yen*. This sum is voted every year by the Diet and comprises the expense on account of training teachers for technical schools. In 1899 the Technical Education Regulations were enacted and at the same time the Rules relating to different kinds of technical schools were drawn up. In 1900 similar rules relating to fishery schools were issued, and in a year later the Rules relating to the Technical

Continution Schools were amended and the details about their working were made public. All these endeavors made by the authorities to encourage technical education were eagerly responded to by the people, so that technical schools were founded, one after another, in quick succession. At persent the technical schools of the higher and lower grades number 240 and the Technical Continuation Schools 1,021.

A. Schools relating to manufacture.

1. Higher Technical Schools.—There are three Higher Technical Schools, these being the Tokyo Higher Technical School, the Osaka Higher Technical School and the Kyoto Higher Technical School. They are all Government institutions.

a. The Tokyo Higher Technical School.—Founded in 1881 under the style of the Tokyo Technical School it assumed its present name in 1900. The school devotes itself to giving instruction both theoretical and practical to those who aspire to engage in manufacturing and technical work. It contains six different departments, these being dyeing, ceramics, applied chemistry, mechanics, electricity, and designs as applied to the manufacturing industry. The dyeing department is further subdivided into dyeing proper and weaving, while the department of electricity is subdivided into electrical engineering and chemical electricity. The school has attached to it an apprentice course.

b. The Ōsaka Higher Technical School.—This schools was founded in the city of Osaka in 1896 and it aims at educating those who have to engage in industrial work. The courses provided in it are mechanical engineering, chemical technology, and shipbuild, ing. The chemical department is subdivided into five different branches, these being applied chemistry, dyeing, ceramices, brewing and metallurgy. The shipbuilding department is subdivided into the two branches of hull work and machinery.

c. The Koyto Technical School.—This is the latest of the three, having been established in 1902. The school educates those who wish to engage in manufacturing industry or to become teachers in technical schools. This school comprises the three courses of dyeing, weaving and designing.

2. Technical Schools.—The Technical Schools are institu-

tions which teach technical education of secondary grade. They are either prefectural or communal schools. The curriculum of the schools of this kind comprises morals, reading, composition, mathematics, physics, chemistry, drawing, gymnastics, and practical training on the technical subjects taught. Geography, history, natural history, foreign languages, political economy, statute laws, and book-keeping may be added to the curriculum, the number of such additional subjects to be one or more, according to circumstances.

The technical subjects in which a practical training is to be imparted on the students are selected from the following, the number of such subjects to be one or more according to circumstances :—Civil engineering, metal-work, shipbuilding, electricity, wood-work, mining, dyeing, ceramics, designing.

3. Apprentice Schools.—The school of this kind is intended to give the necessary teaching to those desirous of becoming mechanics. It is either a prefectural or communal establishment, and may be attached to either an ordinary primary or a higher primary school. The subjects taught are morals, arithmetic, geometry, physics, chemistry, drawing, and practical training on one or more technical subjects. All those subjects, with the exception of morals, may be made either optional or may be suitably modified according local requirements, while the technical subjects for giving practical training may be limited to those easily accessible to the school. The term of study ranges from six months to four years, and the teaching may be conducted on Sundays and in the evening besides at ordinary hours. It may also be limited in certain season.

B. Schools relating to agricultural education.

1. Higher Agricultural institutions :—There are besides the College of Agriculture of the Tokyo Imperial University, two higher institutions devoted to agricultural education, and these are the Sapporo Agricultural College and the Morioka Higher Agricultural and Dendrological School, both being Government establishments.

a. The Sapporo Agricultural College :—Founded at Sapporo, Hokkaidō, in 1875, this institution gives education in the higher branches of agriculture, theoretical and applied, and other subjects required in the work of exploiting the island of Hokkaidō.

The courses consist of main course, preparatory course, civil engineering course, forestry course, and practical agriculture course. One conspicuous feature in this institution is the possessing of about 6,000 *chō* of an arable land, a large tract forest land, about 200 horses and cattle, a botanical garden measuring about 34,800 *tsubo*, and a museum containing over 12,000 specimens. These are quite sufficient to satisfy the demand of the faculty and students for materials and opportunities both of scientific researches and practical training.

b. The Morioka Higher Agricultural and Dendrological School.—The school was opened only in April, 1903, the courses provided being agriculture, dendrology and a veterinary course.

2. Agricultural Schools of class A.—The schools belonging to this category are either prefectural or communal schools and are intended to give a scientific and practical training to farmers or their sons. The main aim kept in view is to impart necessary knowledge to future farmers of the middle class. The subject taught is mainly agriculture, but besides it the subjects of sericulture, forestry, and veterinary surgery may be provided, the number of subjects to be one or more.

A school of this kind has to provide itself with suitable accommodation for giving practical training to the students, this accommodation differing in nature according to the kind of the principal subject taught.

3. Agricultural Schools of class B.—A school of this category is lower in grade than the one mentioned in the preceding paragraph and the term of study is not to exceed three years. The object of this school is, (a) to impart an elementary agricultural knowledge to those who finished their primary education, and (b) to teach farmers within a short period of time on agricultural subjects closely connected with the local circumstances.

For those who belong to the former class the term extends for two to three years, while the term may not exceed one year for the students of the latter class. The longer term school may be a permanent establishment but the other may be temporary, and the class-rooms may be provisionally established at

different places. A school of this grade may be either a prefectural or communal establishment.

In October 1902 the record of the two grades of schools read as follows:—

Number of Schools	93
Number of Teachers	733
Number of Students	9,763
Number of Graduates	1,755

C. Schools Relating to Fishery.

The schools of this description are comparatively small in number. There is only one institution where higher education on the subject is taught, and that is the Fishery School under control of the Department of Agriculture and Commerce. The other fishery schools are intended to give technical education on fishery of secondary or lower grade and are maintained either by a prefecture or a community. The course of study at all those schools is generally divided into fishing, manufacture and fecundation. Some schools adopt one or more of the foregoing subjects as special courses of study. These courses of study may be established side by side with those on marine navigation or on other technical subjects.

In October of 1902 the fishery education record read as follows:—

Number of Schools	6
Number of Teachers	26
Number of Students	351
Number of Graduates	8

D. Schools Relating to Commercial Education,

1. Higher Commercial Schools.—The schools of this grade are two in number, namely the Tokyo Higher Commercial School and the Kobe Higher Commercial School, both being maintained by the Government.

a. The Tokyo Higher Commercial School.—The school was founded in 1885, and during the subsequent 17 years it was the only place where higher education on commerce was

given. The school course divided into preparatory, main, and professional departments.

b. The Kobe Higher Commercial Schools.—This was opened at Kobe in April 1903 and is intended to satisfy the growing demand for commercial education which demand could not be easily met by the Tokyo institution alone. In standing and all other respects the younger school is identical with the older school.

2. Commercial Schools of Class A.—The schools belonging to this category are designed to give technical education on commerce of secondary or lower grade, and are maintained either by a prefecture or by a community. The first school of this kind was founded in 1884, and since then the number has considerably increased some of the schools being even higher than the regulation standard. The candidates for admission must be graduates of the four year course of a higher primary school or those of equal scholarship. An examination in a foreign language may be insisted on prior to admission to the school. In general a preparatory course is provided for the benefit of the graduates.

3. Commercial Schools of Class B.—The schools of the grade admit those who are not less than ten years old and who have finished the four year course in the ordinary primary school. The term of study extends for not more than three years. The subjects of study are nearly equal to those in the grade A. schools. These inferior schools may add some other subject of study suitable to local circumstance or may create a special course. The school is a prefectural or communal establishment.

The record of the commercial schools of the two grades read as follow in October 1902:—

Number of Schools	48
Number of Teachers	650
Number of Students...	11,735
Number of Graduates	1,592

E. Schools Relating to Navigation.

The only institution where a higher course of nautical

education is imparted is the Nautical College maintained by the Department of Communications.

1. Nautical Schools of Class *A*.—The schools of this class devote themselves to training mariners of the higher class. The course of study is subdivided into navigation and engineering, and the subjects of teaching comprise morals, reading, composition, mathematics, physics, geography, a foreign language, drawing, gymnastics, and practical lessons on technical subjects. Besides, chemistry, statute law, and other subjects allied to nautical work may be added.

2. Nautical Schools of Class *B*.—Being a school where seamen of a lower class than those in the above-mentioned schools are trained, its course of study does not generally exceed two years, and it admits graduates of primary schools. As yet no nautical school of this inferior class actually exists.

The figures with regard to navigation schools was as follows in October 1902 :—

Number of Schools	7
Number of Teachers	53
Number of Students	784
Number of Graduates	4

F. Technical Continuation Schools.

The Technical Continuation Schools are places where elementary knowledge on technical subjects is given to those who are either actually engaged in technical business or are desirous to enter such business. They are at the same time intended to supplement primary education. This being their object, the Technical Continuation Schools present very irregular aspects in points of details. The subjects taught are agriculture, manufacture, commerce and fishery, and in most cases one school combines two or more subjects. The term of study is also diverse, extending for two or three years in some schools and in others only six months or so. Then some may collect a fee, of not more than 30 *sen* at most, while no fee is collected in others. Teachers of this kind of schools are generally teachers of primary schools who attend to this particular business in their spare hours, and the number of these teachers does not exceed three or

four for one school, besides the schoolmaster. Provisions for training teachers of this sort are now sufficiently maintained, for some of the local technical schools provide a special course to answer this purpose, and the summer schools opened every year under the patronage of the Department of Education also offer excellent opportunities to primary school teachers and other desirous of being initiated into the subject.

In schools of this class candidates for admission must have at least completed the ordinary primary school course. However a special arrangement exists for the benefit of those who have not yet finished that course.

It was in 1894 that the term Technical Continuation Schools was first officially adopted. In that year 22 schools of this grade were founded, the number being increased to 186 by June 1901. After that year some schools were converted into schools of another nature while a few were closed; on the whole the cause of this branch of education is making steady progress. Of those schools about one-third are enjoying a grant-in-aid from the Treasury. The latest returns on the Schools are as follows:—

Number of Schools	221
Number of Teachers	431
Number of Students...	12,992
Number of Graduates	1,779

G. Technical Education Funds.

As mentioned in the preceding part, the Government has been paying since 1894 no small sum, comparatively speaking, towards the encouragement of technical education. The schools enjoying this help are generally technical schools maintained by the public funds, and those maintained by industrial or commercial associatiom may also participate in the benefit. The sum set apart on this account was at first limited to 150,000 but has since been increased till at present it amounts to 320,000 *yen*. This increase was owing to the founding of a large number of new technical and commercial schools subsequent to the coming into operation of the encouragement programme. At first there were about forty or fifty schools that were allowed to participate in the fund, but the cor-

responding number increased to 179 in March 1901 and to 210 a year after.

Theoretically the help from the funds may come up to the level of the sum disbursed by the founders of a school for maintaining it, but owing to large number of schools entitled to the allowance from the funds, the rate of the help generally ranges from 16 to 25 per cent of the amount of maintenance.

H. Training of Technical School teachers.

With the advance of technical education and the increase of the number of schools of this description and of the students, provisions for supplying teachers qualified to undertake the teaching are required. In pursuance of that object the Department issued in April 1899 Rules relating to Technical Education Teachers, which were amended two years after with the object of enlarging the scope of operation. Some details of the working of this provision will be mentioned below.

1- Help to Students aspiring to become teachers of technical schools.—The sum of 6 *yen* a month is being furnished by the Department of Education to those students who engage to become teachers of technical schools after their graduation, the students being those of the following institution:—course of agriculture (both main and practical) of the College of Agriculture of the Tokyo Imperial University, Tokyo Higher Commercial School, Tokyo Higher Technical School, Tokyo Nautical College, Tokyo Fine Art School, Fishery School (under control of the Department of Agriculture and Commerce).

2. Training Schools.—The College of Agriculture, the Tokyo Higher Commercial and the Higher Technical Schools also establish teachers' training courses of agriculture, commerce and technology respectively, and teachers qualified to teach at the Technical Continuation Schools are being trained.

V. LIBRARIES.

The Imperial Library is a Government establishment and is situated in Tokyo. It was established in 1872 in the premises of the Museum controlled by the Department of Education. It is the pioneer institution of the kind in Japan.

In March 1902, the Library contained 363,661 volumes of Japanese and Chinese works, 54,931 volumes of foreign works, in all 418,592, volumes. During the one year ending the above date the Library was open 334 days, and was visited by 133,803 persons, the daily average of 400. The accommodation being judged inadequate to satisfy the growing number of visitors and of the books, pictures. etc. to be kept, the work of constructing new building has been started.

Of the local libraries, the one in Kyoto is the oldest, followed by the two in Osaka. At that particular date libraries of all kinds existing throughout the country numbered 49 containing 408,570 volumes of books, etc. The visitors to the local libraries numbered 107,790, the daily average of 10 persons, during the one year mentioned above. Of these libraries the most noteworthy in the relative perfection of their accommodation are the library belonging to the Imperial Education Society in Tokyo and the library maintained by the prefacture of Kyoto. The library maintained by the prefecture of Miyagi comes next. The rest are of smaller scope and visited by a smaller number of people.

SUPPLEMENT.

FORMOSA.

Introductory—Agriculture—Fishery—Forestry—Mining—Trade—Finance—Communications—Education, Sanitation and Religion.

I. INTRODUCTORY.

A. Geography.

General Remarks.—The districts under the jurisdiction of the Governor-General's Office of Formosa comprise Formosa, Hoko-tō (the Pescadores) and all the islands lying about them. Formosa extends from 21°10′ to 25°30′ N. latitude and from 119°10′ to 122°10′ E. longitude. The Tropic of Cancer runs almost through its centre and the southern half of Formosa therefore belongs to the tropical zone.

Positions.

The accurate geodesic surveying of Formosa being not yet completed, the positions of the principal places can only be approximately indicated, as follows:—

Name of Place.	North Latitude.	East Longitude.
Kelung	25° 8′	121° 45′
Tansui	25° 10′	121° 25′
Taihoku (Taipeh)	25° 4′	121° 28′
Taichu	24° 2′	120° 40′
Tainan	22° 59′	120° 47′
Anpei (Anping)	22° 59′	120° 13′
Takao	22° 36′	120° 16′
Hoko-tō (the Pescadores) ...	23° 33′	119° 34′
Kōshun	22° 4′	120° 47′
Karenko	23° 55′	121° 35′

The area of Formosa can only be approximately given, for the extensive work of surveying started some years ago is not

yet completed. According to the latest available returns
Area. the area of Formosa proper measures about 2,260 square *ri*, while that of the Pescadores and other islands covers about 13 square *ri*. The area of Formosa proper being classified according to elevation, the following table is obtained:—

Elevation (metre)		Area (sq. *Ri.*)	
Above	100	About	1,474.491
„	500	„	984.923
„	1,000	„	486.923
„	1,500	„	223.923
„	2,000	„	111.11
„	2,500	„	48.8
„	3,000	„	17.45

For further descriptions of the geography of Formosa the reader is referred to the Introductory chapter of this work.

B. Fauna and Flora.

General Remarks.—A brief description of the fauna and flora of Formosa will now be given.

According to Wallace's "Geographical Distribution of Animals," the fauna of Formosa belongs to the Oriental section which comprises the south-eastern part of the continent of Asia
Fauna. and the islands lying south thereof. A certain Western authority states that the mammals found in Formosa number 35 as to species, and of these 14 are peculiar to this island. There are 196 species of birds, according to Mr. Tada of the College of Sciences of the Imperial Tokyo University, and of that number 31 are judged to be peculiar to this place. Then there are several species of saurians very rarely met with elsewhere. Some of the snakes are poisonous. Of fish may be mentioned species of Sclachaiclei and Balordei; then carps, eels, etc., while of molluces may be mentioned species of Pecten, Tridacua, Chiton, Murex, Oclapada, etc. Oysters are extensively cultivated. A large number of insects are found, some of them being extremely beautiful.

According to Mr. Grisebach's formulae of geographical distribution of plants, the flora of Formosa belongs to the extreme south division of the China-Japan zone and is practically identical with that of the trade wind zone region of India. The Formosan flora is

further divisible into three main parts. For instance, the flora of hills and plains presents characteristics possessed by the flora of India and Southern China, the southern flora has qualities more or less in common with the flora of the Philippines, while the flora in mountainous districts much resembles that of Japan proper, middle China and Himalaya.

According to Mr. Angustine Henry's exploration, Formosa contains 1,429 species of plants, exclusive of algæ, as follows:—

Phanerogamia	1283
Filices	131
Zycopodiaceæ, Marsiliaceae, Equisetaceae	15
	1,429

As 20 species of acclimatized plants and 81 species of cultivated plants are included in the above figures, the plants indigenous to the island are reduced to 1,328 of which the flowering plant number 1182 and the flowerless plants the remaining 146. Mr. Henry's investigation is not complete, however, as it did not extend to the backwood regions. Especially in Ericaceæ and Coniferæ his investigation has been found incomplete. His list contains only 6 plants of the latter order, but 16 more have already been discovered.

According to the investigations so far carried out by our scientific experts, 103 species divided into 79 genera are judged to be peculiar to Formosa, though the genera themselves also exist elsewhere.

It is curious to observe that the majority of acclimatised plants are of American origin, as, for instance, *Psidium guyala*, *Ascrepias curassavica*, *Mirabilis jazapa*, *Tycopersicum esculentum*, etc. Another thing that is noteworthy in this respect is the fact that plants peculiar to Australia, as Acacia, are found in plains and hills, the Acacia growing luxuriantly in southern Formosa. These plants evidently came from the South Pacific and acclimatised in some remote time.

Prof. Honda, of the Imperial Tokyo University, who has

investigated the forest zones of the island, tabulates them as follows:—

			Forest Zone.	Extent of Zone.
	Tropical Forest.	Banyan Zone.	Below 1,500 ft.	Below 2,000 ft.
Broad-Leafed Evergreens	Torrid Forest	Camphore Zone	1,500 to 3,500 ft.	500 to 4,500 ft.
		Quercus-Pasania Zone	3,500 to 6,000 ft.	1,500 to 8,500 ft.
	Temperate Forest	Chamaecyparis & Araucaria Zone	6,000 to 7,000 ft.	5,500 to 7,500 ft.
		Picea Zone ...	7,000 to 8,500 ft.	6,500 to 9,000 ft.
		Tsuya Zone ...	8,500 to 10,500 ft.	8,000 to 11,000 ft.
Conifers.	Frigid Forest ...	Abies Zone ...	Above 10,500 ft.	Above 10,000 ft.

In the Tropical forest 18 species of banyan trees is found, the principal species being *Ficus retuca* and *Ficus Wightiana.* In the Torrid forest the principal trees are *Cinnamomum camphora,* various species of Quercus, *Pasania cuspidata,* and others. In the Temperate forest the principal trees are several species of Chamæcyparis, Picea, Tsuya and others. Finally the Frigid forest contains Abies, Juniperus, Pirus, and a few others. It may also be noted in conclusion that the forest zone of the mountainous regions somewhat resembles the Californian flora, especially in the possession of Libocedrus, Chamæcyparis, Taxaceæ, and others.

C. History.

General Remarks.—The history of Formosa may be divided into six parts, namely (1) period of chaos, (2) Dutch occupation, (3) Spanish occupation, (4) period of native kingdom (5) Chinese rule, (6) annexation by Japan.

1. Period of Chaos.—By the "Period of Chaos" is meant that period when the island had no definite government to rule it and when it was a haunt of outlaws from China and other places who used it as their hiding-place.

The discovery of Formosa, so far as authentic history goes, took place in the beginning of the 7th century of the Christian era, during the reign of the Sui dynasty in China.

But the sovereign rulers of China of that dynasty and most of the others that succeeded it, did not trouble themselves much about annexing the island as part and parcel of their dominions, and the outlaws who invariably made their appearance on every occasion of dynastic changes in China and also of other people

also placed outside the pale of Chinese control were left unmolested masters of the island. The number of such political outlaws who came over to Formosa was especially numerous when the present Manchu Dynasty overthrew the Dynasty of Ming.

Nor were outlaws from Japan altogether absent from the island; on the contrary, they also came to the island and used it as their base of operation. They were in most cases buccaneers who occupied themselves as pirates along the coast of China. Their stay in the island was therefore temporary, and very seldom they settled down, as the refugees from China generally did. It is interesting to note that the name "Formosa" was given to the island by the Portuguese navigators, and signifies "The Beautiful."

2. The Dutch Occupation.—The Dutch occupied the Pescadores in 1622, probably out of rivalry to the Portuguese who had planted their colony at Maccao, and to the Spaniards who had already held Luzon, one of the Philippine group. It should be added that this occupation of the Pescadores by the Dutch, at first objected to by China, afterward obtained the assent of that Government. It agreed, under certain conditions, to allow the Dutch to occupy the Pescadores and Formosa. The Dutch East India Company was made to govern the island. The Dutch erected a fort at Anpin and Tainan, the two receiving the Dutch titles of Zeelandia and Providentia respectively. The Dutch Colony numbered 600 and their garrison about 2,200, while the Chinese settlers numbered from 25,000 to 30,000 families. The Japanese were also in the island, though their number is unknown. They generally lived there to carry on trade with western people residing in the Far East, for about this period the Shogunate of Japan encouraged our people to undertake foreign trade and a large numbers of our trading ships navigated in the South Sea. The Dutch administrator was once placed in hot water as a result of his unjust treatment of a Japanese trading ship. To give a brief account of this interesting episode, that ship was plundered by the Dutch inhabitants on the Pescadores as she took shelter there on her way to Fuchow. The Magistrate of Nagasaki, in whose jurisdiction the

foreign trade business of Japan was placed, sent an experienced South Sea trader to Formosa to demand damage. So strongly did this trader represented the case entrusted to him, that at one time the incident even threatened to bring about a serious trouble between this country and Holland. At last the Dutch gave way, and at the instance of the Governor-General stationed at Batavia the administrator in Formosa was replaced and thus Japan carried her points in this affair.

The Dutch rules were by no means liked by the Chinese in the island for the latter had many grudges to entertain against the others. Especially did the Chinese fret against the imposition of taxes from which they had been left free before the arrival of the "intruders.." This souldering sense of hostility of the Chinese at last broke out ablaze in their organized attempt to dethrone the Dutch sway by a bold coup. In 1652 the leading malcontents in the neighborhood of Providential, that is Tainan, openly rose against the Dutch garrison and colony. They pressed them hard. A Dutch contingent from Zeelandia arrived on the scene of trouble in a hurry, and with the help of a force of the friendly aborigines, at last succeeded in suppressing the insurrection. About 4,000 insurgents were killed in the last battle.

Meanwhile the power of Holland began to wane in Europe, and this of course affected the Dutch influence in the Far East. The Japanese too had disappeared from the island, for Japan had changed her policy about foreign intercourse and prohibited her people from venturing abroad.

In 1661 the Chinese general named Chêng Kung, better known as Koxinga by the Western people, who refused to swear allegiance to the new Manchu Dynasty demanded of the Dutch administrator in the island that he evacuate the place, and when this was refused Chêng invaded the Pescadores and Zeelandia at the head of 20,000 men. The Dutch consul in the island sent the alarming intelligence to Batavia and asked the immediate dispatch of reinforcements. Batavian Government at first tried to arrive at some sort of compromise with the invading army and as a measure towards that end recalled the consul. Chêng would not listen to this proposal and invested Zeelandia. The garrison held out for seven months, when it was forced to surrender. This occurred in January, 1662, so that the Dutch occupation of the island lasted 38 years.

3. The Spanish Occupation.—The Spanish occupation of the island was almost contemporaneous with that of the Dutch, for it took place in May, 1626. The two rival colonies divided their spheres of influence, so to say, and while the Dutch established themselves in the middle and southern Formosa the Spaniards held the northern part. They stationed their garrison at the present Kelung which they called San Salvador and also at Tansui which they called Santiago. The rival colonies that had already been looking askance at each often at last came to blows in 1642. The Dutch were victories and the Spanish occupation was at an end in the 16th year of its existence.

4. The Period of Native Kingdom.—Koxinga who drove the Dutch out of the island was one of the most illustrious of the remnant of Chinese captains who faithfully defended the fallen cause of the Ming Dynasty and withstood the ascendency of the new Manchu rulers. He and his little band of compatriots raised their rebellious banner in southern China, but they were dislodged from one position after another by the superior force of the Imperialists till at last they were cornered in the little island of Amoy. Then it was that these faithful adherents of the fallen dynasty began to direct their attention to Formosa and decided to obtain there a more secure and extensive footing.

The cause which Koxinga upheld was however doomed to fall even after his removal to the new place. The "Legitimatists," as Koxinga and his adherents called themselves, at first devoted their attention to procure means to carry on their operations against the "Usurper's" army and for this purpose to open wild land in northern and middle Formosa. Leaving a part of the men to garrison the important places, all the rest betook themselves to the peaceful work of reclaiming the virgin soil. Though Koxinga principal design never bore fruit, this peaceful undertaking that was subordinate to it proved a lasting source of benefit for the island, in that it was during the short tenure of Koxinga's ascendency that a large tract of level land in the vicinity of Hozan, Koshun, Kagi, Shoka, Shinchiku, Taihoku and others was brought under cultivation.

Circumstances not favoring Koxinga to carry into execution his

resolution to make a descent on the Manchu dominions, he next turned his attention to expanding the area of footing towards the south, and to add Luzon to his base of operations, for Luzon at that time contained a large number of Chinese who espoused in common with Koxinga the cause of the Ming Dynasty. A plan was concerted between Koxinga and his Luzon friends for the overthrow of the Spanish rulers. This was discovered before it was mature, and the Spanish massacred as many as 24,000 Chinese in cold blood. About this time the sad intelligence reached Formosa of the assassination in Burmah of the last legitimate heir of Ming Dynasty. This was a death-blow to the ambition of Koxinga, and he himself was carried away by decease a few months afterward. After the death of Koxinga the cause of the "Legitimatists" went from bad to worse, for his son Ko-shung on whom fell the mantle of Koxinga, could not naturally enjoy sufficient prestige among his captains to command their faithful obedience. He himself lacked the enthusiasm of his father, while the disaffection that made its appearance among the captains made the matter worse. Chêng Ko-shwang in May, 1683, the Manchu Government sent an expedition against him and occupied the Pescadores. Chêng Ko-shwang surrendered with all his captains in July of that year and with this the ascendency of the Koxinga family in the island terminated.

5. The Period of Chinese Rule.—The surrender of Ko-swang gave rise to a practical question of what should China do with Formosa; in other words, whether China should leave the island to shift for itself or whether it should be brought under the sway of her dominion. The latter view prevailed and Formosa was placed under the jurisdiction of the Province of Fukien.

During the space of over two centuries, from 1684, when Formosa was brought under Chinese rule, to 1895 when it was ceded to our country, Formosa proved more a source of trouble and humiliation and less that of benefit to China. Insurrections frequently broke out in the island and in one or two cases the insurrectionists held for some while the control of the island in their hands; Nor was China less troubled about the island in her foreign relations, on the contrary Formosa constantly involved its owners in humilia-

ting and awkward positions. The savages in this island very frequently plundered ships and murdered the crews wrecked on the dangerous coast of the island, and such occurrences of course occasioned trouble between China and the foreign governments to which the ships belonged. Once a trouble was occasioned on that account with the United States of America and next with Japan. The case with Japan was specially serious. As the Chinese Government refused to hold itself responsible for the murder of some Luchu fishermen by the savage aborigines, Japan sent an expedition against them, to inflict upon the a severe chastisement. The diplomatic negotiations that were next opened on the subject between Japan and China did not proceed smoothly at first, for the latter refused to pay indemnity for acts committed by the aborigines of Formosa. The negotiations that were in imminent danger of rupture were at last amicably terminated, and China was prevailed upon at the eleventh hour to listen to the demand of Japan and to pay the indemnity.

Another important part which Formosa played in China's foreign relation occurred in 1884 when war broke out between China and France about Annam, and when the squadron of the latter occupied the Pescadores and sealed the ports of Formosa.

Warned by such international troubles which Formosa frequently engendered, China determined to bring affairs in the island to better order and method. In pursuance of that resolution, Formosa with all its adjoining islands was detached from Fukuien and elevated to the dignity of an independent province. The first Governor appointed was the celebrated Liu Ming-Chwén under whose energetic administration Formosa began to prosper as never it did before. But fate was against China in regard to this island, and China had to lose the island forever and cede it to Japan, the formal transfer of the island taking place on June 2nd, 1895.

5. Annexation by Japan.—The annexation was merely formal, for the islanders, instigated by their last Governor Liu—for Liu had resigned his place years ago as his progressive system of administration was not regarded with favor by the central Govern ment—, rebelled against their new rulers.

The new rulers had therefore to undertake the double task of

subjugation and administrations. The suppression of these hostile movements on the part of the islanders was concluded in about a year and the island was placed on March 31st, 1896, under the civil administration of the Governor-General's Office, while within two years from the ratification of the Treaty of Peace, that is by April, 1897, the natives were to decide whether they would swear allegiance to the new rulers or preferred to remain as Chinese subjects.

The administration policy of the Governor-General judiciously combined moderation and severity. The natives were left free and unmolested in their old customs and manners even when those practices were regarded injurious, as, for instance, the custom of foot-finding of women. Even in regard to the deleterious habit of opium-smoking, the Government did not prohibit it all at once; instead it adopted measures for eradicating this vicious habit by gradual process.

At the same time the authorities sternly repressed all those acts inimical to the maintenance of order in the island, and in this the Government was confronted with the most arduous task in suppressing the disorderly practices of the so-called "armed raiders" who constituted a perennial source of grave evil for the maintenance of order in the island, when it was held by China. The raiders were originally refugees or settlers from southern China, and were a sort of professional freebooters who exist almost everywhere in China, and who are known under different names in different places. The former Chinese officers and officials who were on duty in the island, out of spite to the Japanese authorities, stooped to join hands with their old foes, and abetted and instigated them to rise against the new rulers of the island. For about three years from the formal transfer of the island to Japan the troops stationed in the various parts of the island devoted themselves to quelling the risings of those raiders. By 1898 the raiders had had enough thrashing from the soldiery and constabulary force and were given opportunities to take the oath of allegiance to their new rulers and to become as law-abiding people. The raiders eagerly availed themselves of this opportunity and took the oath, and in northern Formosa at least peace was completely restored.

Matters were not so satisfactory in districts remote from the

seat of the Government, especially in middle and southern Formosa. They had grown even more troublesome as they were reinforced by bands of confirmed peace-breakers coming from the northern districts.

In order to purge completely once for all this standing menace to peace and prosperity in that district the Governor-General carried out in about six months beginning at the end of 1901, an organized clearing movement. It was a completely success, for while it entirely shattered whatever power of resistance that the raiders and banditti retained, it impressed powerfully on all the other classes in the island of the futility of any attempt at resisting the Imperial Government. Thus in eight years from the annexation of the island peace was completely restored, and apparently the island has been relieved from this source of trouble from which the Chinese rulers had been constantly annoyed.

It should be added that the law-abiding people of the island being equally interested with the authorities in the restoration of order, tendered their services for attaining this common end. For this purpose they organized themselves into voluntary corps charged with the task of preserving peace and order in their own districts.

D. Population.

1. Total Population.—The latest census returns put the total population of Formosa and the Pescadores as follows:—

District.	No. of Family.	Male.	Female.	Total.	Ratio of Females per 100 of Males.	
					People from Japan Proper.	Natives.
Taihoku	60,484	161,349	132,972	294,321	60.25	83.89
Kelung	17,890	56,922	44,513	101,435	58.37	79.40
Gilan	20,746	57,164	49,173	106,337	50.37	86.50
Shinko	8,149	22,564	18,329	40,893	22.92	81.61
Toshiyen	29,897	100,545	86,397	186,942	69.79	85.98
Shinchiku	29,651	86,855	75,204	162,059	63.95	86.84
Byoritsu	22,219	67,999	62,166	130,165	63.51	91.64
Taichu	34,901	104,617	85,518	190,135	56.65	82.16
Shokwa	49,202	146,018	118,725	264,743	52.10	81.43
Nanto	13,617	33,607	31,583	65,190	38.24	94.49
Toroku	38,747	110,073	94,163	204,236	40.75	85.89

District.	No. of Family.	Male.	Female.	Total.	Ratio of Females per 100 of Males. People from Japan Proper.	Natives.
Kagi	43,344	116,391	97,107	213,498	51.80	83.65
Ensuiko...	46,020	137,018	113,440	250,458	25.81	83.04
Tainan	39,424	102,642	85,641	188,283	68.23	83.89
Banshoryo	9,198	23,549	22,138	45,687	31.35	94.50
Hozan	36,348	93,402	81,347	174,749	50.18	87.54
Ako	32,628	91,635	83,540	175,175	35.89	91.39
Koshun...	4,229	11,980	11,037	23,017	38.89	93.02
Taito	11,226	27,773	25,825	53,598	42.29	93.83
Pescadores	10,866	27,185	26,966	54,151	73.41	99.77
Grand Total ...	558,786	1,579,288	1,345,784	2,925,072	57.36	85.69

Note :—In the above figures the inhabitants of Botel Tobago Island in the jurisdiction of Taito are not included, the returns about them being lacking. Nor are the officers and men of the garrison included. However the figures include the actual number of aborigines. There were besides five families, consisting of 8 males, who lived among the aborigines' communities in the jurisdiction of Koshun.

The foregoing figures classified according to the origin of the three main divisions of people in Formosa, that is, people from Japan proper, native islanders, and aborigines, the following three tables are obtained :—

a. PEOPLE FROM JAPAN PROPER.

District.	No. of Resident Family.	No. of People Actually Residing. Male.	Female.	Total.
Taihoku	5,771	10,108	6,090	16,198
Kelung	896	3,243	1,893	5,136
Gilan	305	754	380	1,134
Shinko	84	144	33	177
Toshiyen	166	331	231	562
Shinchiku	582	957	612	1,569
Byoritsu	211	518	329	847
Taichu	998	1,723	976	2,699
Shokwa	217	595	310	905
Nanto	133	306	117	423
Toroku	386	827	337	1,164
Kagi	604	776	402	1,178
Ensuiko	174	589	152	741
Tainan	1,704	2,981	2,034	5,015
Banshoryo	152	185	58	243
Hozan	524	1,118	561	1,679
Ako	154	365	131	496
Koshun	83	198	77	275
Taito	304	454	192	646
Pescadores	329	598	439	1,037
Grand Total... ...	13,777	26,770	15,354	42,124

b. NATIVE ISLANDERS.

District.	No. of Resident Family.	No. of People Actually Residing. Male.	Female.	Total.
Taihoku	54,713	151,241	126,882	278,123
Kelung	16,994	53,679	42,620	96,299
Gilan	19,606	54,148	46,502	100,650
Shinko	7,958	22,130	18,001	40,131
Toshiyen...	29,024	98,459	84,455	182,914
Shinchiku	28,286	84,023	72,777	156,800
Byoritsu	21,698	66,781	61,247	128,028
Taichu	33,408	101,896	83,595	185,491
Shokwa	48,985	145,423	118,415	263,838
Nanto	11,955	29,056	27,756	56,812
Toroku	37,958	107,433	92,117	199,550
Kagi	42,610	114,854	96,042	210,896
Ensuiko	45,846	136,429	113,288	249,717
Tainan	37,720	99,661	83,607	183,268
Banshoryo	8,565	21,419	20,268	41,687
Hozan	35,824	92,284	80,786	173,070
Ako...	28,945	81,812	74,587	156,399
Koshun	2,448	7,805	7,154	14,959
Taito	3,505	8,987	9,900	16,887
Pescadores	10,537	26,587	26,527	53,114
Grand Total ...	526,585	1,504,107	1,284,526	2,788,633

3. ABORIGINES.

District.	No. of Community.	No. of Resident Family.	No. of People Actually Residing. Male.	Female.	Total.
Gilan	14	835	2,262	2,291	4,553
Shinko	5	107	290	295	585
Toshiyen	28	707	1,755	1,711	3,466
Shinchiku	54	783	1,875	1,815	3,690
Byoritsu	22	310	700	590	1,290
Taichu	15	495	998	947	1,945
Nanto	79	1,529	4,245	3,710	7,955
Toroku	64	403	1,813	1,709	3,522
Kagi	21	130	761	663	1,424
Banshoryo... ...	19	481	1,945	1,812	3,757
Ako	59	3,529	9,458	8,822	18,280
Koshun	53	1,698	3,977	3,806	7,783
Taito	185	7,417	18,322	17,733	36,065
Grand Total ...	618	18,424	48,411	45,904	94,315

2. Relative Density.—According to the returns compiled at the end of 1900, the relative density of population in the various districts of Formosa was as follows:—

District.	Number of Pop'n. per 1 squ. *ri*. People from Japan Proper.	Native Islanders.	Total.	Ratio of People from Japan Proper per 1,000 Islanders.
Taihoku	77	2,606	2,683	29.44
Taichu	13	2,076	2,089	6.49
Tainan	16	1,868	1,884	8.57
Gilan	34	3,016	3,050	11.42
Taito...	2	78	80	29.20
Pescadores ...	72	3,686	3,758	19.59
Grand Total ...	25	1,805	1,830	14.12
1899	22	1,750	1,772	12.61
1898	17	1,725	1,742	9.88
1897	11	1,800	1,811	6.05
1896	7	1,718	1,752	4.11

Note:—In the above figures the returns on the aborigines are not included, the investigations about the area of the aborigines' districts being not yet completed. The figures for 1896 include a small number of persons who could not be ascertained whether they were native islanders or people from Japan proper.

3. Human Races in the Islands.—For the sake of convenience the human races in the island may be divided into three main classes as mentioned in the preceding paragraph; namely, (1) people from Japan proper, (2) native islanders, and (3) aborigines.

People from Japan Proper.

History records the fact that the Japanese voyaged to Formosa for trade and even settled there as early as three centuries ago, while it was quite probable that the natives of Okinawa, placed in close proximity with Formosa, must have had frequent occasions, whether on their own accord or drifted on the sea, to mingle with the Formosans. However it is not scientifically possible to determine whether or not the blood of the Japanese runs in that of the islanders. All that can be stated here is that the regular presence of people from Japan proper began with the annexation of the island to Japan in 1895. Their number is still far below that of either the natives or the aborigines, nor are intermarriages between the two carried on to any perceptible extent. Though numerically small, they occupy

intellectually the foremost position and are the master race of the island.

The native islanders, by whom are meant natives of Chinese origin, are broadly divided into two main classes; namely, settlers from Fukien and settlers from Canton. The former are earlier.

Native Islanders.

Settlers from the opposite coast of China must have arrived at the island from a remote period, considering the geographical proximity of the two places; but it was at the beginning of the reign of the present Manchu Dynasty that the large exodus from China for Formosa took place, as already explained in the section relating to the history of the island. The Fukien settlers, besides being earlier comers, are more numerous than those from Canton, the latter numbering about one-third of the others. One thing that should not be forgotten about those settlers from China is the fact that whatever development Formosa attained formerly in economic matters was solely attributable to the exertions of those settlers.

The aborigines reside in the hilly places running through the central part of the island, in a part of plains in eastern Formosa and on Botel Tobago Island. Anthropologically, these aborigines belong to the Malay race, and their language, though more or less differing according to tribes, is also very much akin to Malay. The aborigines are capable of being classified into a large number of groups, but they may be broadly divided into nine classes as follows:—

Aborigines.

1. Ataiyol
2. Vonum
3. Tsco
4. Tsarisen
5. Paiwan
6. Puyuma
7. Amis
8. Peipo

... on Formosa Proper.

9. Yarui on Botel Tobago Island

Of the foregoing nine tribes, Peipo sometimes called Peipo-hoan or Sek-hoan, possesses an interesting feature that distinguishes it from the others. This tribe originally occupied the western plains

of the island, but in consequence of the arrival there of the Dutch and the Chinese settlers, their superiors intellectually, the Peipo either lost their original characteristics or become entirely extinct. The remnants that are found to-day can hardly be distinguished both in their exterior and their intellectual standard from the Chinese settlers with whom they live as neighbors.

C. Administrative System.

1. The Governor-General's Office.—Since the Office was established on June 17th, 1895, more or less changes have taken place in the administrative system of the island. The system now in force was that revised in November, 1901. The new system is that of two stages while the old one was of three; in other words, whereas, according to the old arrangement, administrative business had to pass three stages before it can reach the people or the Governor-General's Office, only two stages intervene in the existing system which therefore bring the authorities and people into closer touch.

Administrative System.

The Governor-General's Office consists of the Civil Affairs Bureau and the Military and Naval Staff. The former is further subdivided into several offices dealing with Police Affairs, General Affairs, Finance, Communications, Trade and Industry, and Public Works.

Organization of the Office.

2. Local Administration.—At first three prefectures and four district offices were established to look after the administration of the island, but as a result of administrative rearrangements carried out in November, 1901, they were abolished and in place of them 20 district offices were established, situated at the following places:—

Taihoku, Kelung, Gilan, Shinko, Toshiyen, Shinchiku, Byoritsu, Taichu, Shokwa, Nanto, Toroku, Kagi, Ensuiko, Tainan, Banshoryo, Hozan, Ako, Koshun, Taito, Hoko (the Pescadores).

Under each district office a number of communal offices exist to serve as mediums between the Government and local people. These offices number about 563 in all. They are intended to become in time organs of local self-government.

Communal Offices.

The Peace Corps system is a relic of the Chinese rule and attends, subject to regular Police offices, to preserving peace in the respective districts. A unit of corps is made up of ten families placed under the control of one of the seniors. The Peace Corps possess a Volunteer Band composed of adult males. This is chiefly intended to provide against the raid of armed banditti and also against calamities, as fire, flood, etc.

Peace Corps.

3. Legislature. — The Governor-General is empowered in virtue of his own authority to pass sentence inflicting a confinement not exceeding one year in term or a fine not exceeding 200 *yen*. In ordinary cases, however, the legislative affairs are determined by the Governor-General's High Council consisting of the Governor-General, the Director of Civil Affairs Bureau, Officers on the Military and Naval Staffs, Chief Councillor, Councillors, Chief Judge and Chief Procurator of the Appeal Court, Chief Police Commissioner, Directors of the Bureaux. A decision of the Council acquires validity on approvel of the Emperor, but in case of urgent need that approval may be obtained afterward.

All the laws and regulations in force in Japan proper are not enforced in Formosa, but only those that are specified for the new dominion are in force. In civil and commercial affairs a portion of the codes is enforced over the Japanese from Japan proper and also in regard to matters which relate in common to those Japanese and natives. Matters which relate to Chinese and natives are to be dealt with according to pre-established usages. This expedient is also followed in settling matters about land when they relate to Japanese from Japan proper and natives. In criminal affairs all the inhabitants in the island are subject to the Criminal Code and Code of Criminal Procedure.

4. Judiciary.—The judiciary system is dual, that is it consists of Local Courts which deal with matters relating to first instance and the Appeal Court whose judgment is final. Three Local Courts and five Branch Courts exist, the former at Taihoku, Taichu, and Tainan and the latter at Shinchiku, Gilan, Kagi, Hozan and Hoko. The Appeal Court is located at Taihoku. The qualifications of judges and procurators do not differ from those

established in Japan proper. In the Local Court judgement is given by a single judge but in the Appeal Court a college three judges sit over a case.

The barrister's service and rules are in vogue in the island as in Japan proper.

II. AGRICULTURE.

A. Tillage.

1. Natural Classification of Land.—Of the area of Formosa measuring 2,260 sq. *ri* (about 3,500,000 *cho*) the greater part is occupied by hilly places. There are only four plains of some extent, these being the plain extending from Shokwa to Hozan, a district round about Taihoku, Gilan and Taitō. All these plains consist of quarternary formation. Presuming that places more than 100 metres above sea level are hills and forest-land and those of lower elevation plains available for cultivation, the whole land in Formosa may be classified as follows:—

Areas of Plains and Hills.

Hills and Forest-land...	2,250,000 *cho*
Plains and Arable-land	1,264,852 „
Total	3,514,852 *cho*

2. Classification of Arable-land.—As in the case of Japan proper, the arable-land in Formosa may be divided into paddy-fields and upland-fields, the former capable of receiving the cultivation of rice twice a year.

Area of Paddy-Fields and Upland Fields.

Rice being a staple article of diet, its cultivation receives the largest share of attention from the native farmers, and the area of paddy-fields is therefore larger than that of any other as follows:—

	Ko.	per centage.
Paddy Fields	213,165.06	55.9
Upland Fields	168,317.95	44.1
Total	381,483.01	100.0

Note :—1 *ko* corresponds to about 9.724 *tan*.

3. Cultivation.—The natives, being too much disposed to depend upon the natural advantage which the climate extends to them, are content with a simple mode of cultivation which yields a comparatively small amount of harvest. As it is, though paddy-fields give two harvests of rice, the profit which the farmers derive from them does not exceed 20 to 30 *yen* per *ko*. The advantages which bountiful nature bestows upon the islanders are indeed so great that the Formosa farmer can even obtain three crops in one year, two crops of rice and one crop of either a cruciferous or leguminous plant.

Mode of Tillage. One special feature in the tillage prevailing in the island is a greater utilization of the labor of beasts than in Japan proper, especially buffaloes. Implements used in the cultivation with buffaloes are also ingenious.

4. Principal Products.—Of the principal agricultural products, tea, rice, sugar-cane, fibre-plants, etc. deserve first attention, and they will be described below briefly.

a. Tea.

1. Kinds.—There are two kinds of tea produced in Formosa, and they are Oolong-tea and wrapper-tea.

Oolong Tea. Curing is done entirely by hand. The process is divided into several stages, the preliminary process being undertaken by farmers and the finishing or recuring process by tea-merchants. In the preliminary manufacture the leaves are dried in the sun three times. This is done with the object of causing their fermentation and to bring out a flavor peculiar to this tea. After the leaves are dried, they are then fired twice in the pan, then dried by weak fire. This fire-drying is performed three times. From the first sun-drying to the last fire-drying in about 7.50 hours are required for the spring leaves, 5.54 for the summer leaves, 7.38 for the autumn leaves, and 7.13 for those of winter. The

whole process being guided solely by experience and without depending upon the help of instruments, properly so-called, the utmost attention is demanded of the manufacturers. Four *kin* of green leaves produce about 1 *kin* of half-manufactured leaves, so that supposing that 1 *ko* of tea-farms yields 2,000 *kin* of green leaves, the farmer can get 500 *kin* of half-manufactured tea from so much area of tea-plantation.

The finishing process done by the merchants is simple, and consists first in assorting the leaves by passing them through sieves and then drying them in the pan for about seven or eight hours. The leaves are then packed.

The Oolong tea manufactured in that manner stands midway in taste between black tea and green tea, and possesses a peculiar strong flavor, while it is devoid of either bitter or stringent taste.

Wrapper Tea.

Wrapper tea derives its name from the fact that the tea of this special sort is contained in a paper-wrapper, before it is packed in a box. This tea is a recent innovation, dating only 20 years back. The principal point that distinguishes this tea from the Oolong is that, in manufacturing it, a flavor of certain kinds of flowers is imparted to the leaves. Four different flowers are used for this purpose, so that the wrapper-tea is broadly divided into four brands, according to the kind of flower used.

2. Export.—The custom returns on the recent export of Oolong and wrapper teas are quoted below.

EXPORT OF OOLONG TEA.

(unit of *yen*).

Year.	Quantity.	Declared Value.	Average per 100 *kin*.
1867...	203,000	—	—
1868...	396,100	—	—
1869...	546,000	—	—
1870...	1,054,000	—	—
1871...	1,486,800	—	—
1872...	1,951,300	—	—
1873...	1,560,900	—	—
1874...	2,461,000	808,369	32
1875...	4,157,300	1,049,601	25
1876...	5,890,500	—	—

Year.	Quantity.	Declared Value.	Average per 100 *kin.*
1877...	6,923,000	1,904,655	27
1878...	8,026,100	2,283,778	28
1879...	8,503,200	2,955,916	34
1880...	9,047,500	3,278,524	36
1881...	6,944,600	3,395,207	5
1882...	9,030,300	3,651,130	40
1883...	9,905,000	3,398,048	34
1884...	9,867,400	3,539,633	35
1885...	12,273,000	4,122,746	33
1886...	12,128,700	5,066,109	41
1887...	12,644,200	4,995,065	39
1888...	13,574,100	4,429,826	32
1889...	13,070,800	4,366,901	34
1890...	12,862,900	4,688,475	36
1891...	13,575,300	4,126,891	30
1892...	13,671,700	4,443,364	32
1893...	16,394,900	6,167,761	37
1894...	15,400,300	6,144,719	39
1895...	13,399,800	5,991,171	44
1896...	15,923,475	5,854,019	36
1897...	15,228,643	6,906,030	45
1898...	15,095,111	6,222,575	41
1899...	14,547,826	5,511,402	37
1900...	14,598,548	5,300,193	36
1901...	14,539,305	4,185,828	28

b Rice.

1. Yield.—Two harvests of rice are obtained, as mentioned before, from paddy-fields of Formosa, and as these fields constitute over 55 per cent. of the whole area of arable-land, the quantity of rice produced ought to amount to immense figures, if cultivation is conducted with more care. At present, however, the output is comparatively small, as demonstrated by the following returns showing the crop of 1901.

		Area (*ko*)	Harvest (*koku*).	Remark.
1st Harvest	Ordinary Rice ...	155,232.08	3,494,241	Success.
	Glutinous Rice ...	13,301.41	230,878	Success.
2nd Harvest	Ordinary Rice ...	140,902.89	1,975,256	Drought and Injuries of Insects.
	Glutinous Rice ...	12,470.15	131,620	

The average yield in the earlier harvest was only 22.1 *koku* even when the circumstances were so favorable, while that in the

later harvest was less than 8 *koku*. Such small yield is essentially due to the defective mode of cultivation.

2. Supply and Demand.—The supply of ice exceeds demand in the island, so that the export to China and Japan proper far exceeds the import from those places to the island, as shown below :—

	Import (picul)	Value (*yen*)	Export (picul)	Value (*yen*)
1901	39,900	154,437	633,697	2,156,752
1900	43,136	167,383	760,046	2,276,360
1899	675,897	2,584,968	401,129	1,263,474
1898	249,031	870,609	149,646	2,168,339
1897	56,492	182,248	738,146	1,799,763
1896	236,324	765,834	387,178	913,292

3. Mode of Cultivation.—The mode of cultivation may be said to be essentially similar as that prevailing in Japan proper. The planting for the earlier crop is done in northern Formosa in the beginning or middle of February and the harvesting is made five months afterward. For the second crop the planting is performed in the middle or at the end of June and the harvesting at the end of October or the beginning of November. In southern Formosa the corresponding periods are about a month earlier.

The varieties of rice differ according as they are grown for the earlier harvest or the later harvest, and taken altogether there are about one hundred varieties of rice.

4. Quality.—In quality the Formosan rice is brittle and is devoid of lustre and tenacity. The proportion of immature rice is larger than that grown in Japan proper, so that the ratio of diminution incidental to husking amounts to over 10 per cent., such a large quantity being reduced to powder in husking.

c. Sugar-cane.

Sugar-cane must have been cultivated in the island for two centuries at the least, but it was only forty years ago that the industry received a powerful stimulus, owing to a marked rise of the sugar market at that time.

1 Planting Districts and Output.—The plant is cultivated throughout the island but the districts where its planting is most

active are in southern Formosa and places lying between 22° 25′ and 23° 48′ N. L.

The area of cultivation in recent years is as follows:—

Year.	Area (*ko*).	Yield (*kin*).	Remark.
1900	16,576.26	270,865,055	Drought
1899	31,921.80	342,343,940	Land Requisitioned by Railroad work.
1898	34,446.24	235,915,319	——

Year.	No. of Refinery.	Output.	Value.
1900	1,093	47,943,822	2,637,078
1899	1,275	81,696,235	3,887,538
1898	1,388	70,259,578	2,912,330

2. Export.—At present sugar goes only to China and Japan proper, though formerly it was shipped to Australia, British India New Zealand, America and England. The custom returns are as follows:—

Year.	Value.	Year.	Value.
1901	695,920	1898	1,984,375
1900	2,207,084	1897	1,494,042
1899	1,586,945	1896	1,529,460

The principal shipping outlets are Takao and Anping.

3. Situation of the Industry.—Owing to various causes, such as the removal of large capitalists to China, the disturbance by the armed banditti, and so forth, the industry appears to have somewhat declined since the annexation of the island by Japan. In order to restore the industry to its former prosperity and further to push it to a state of development commensurate with the advantages which the island now enjoys in these respects, the Formosan Government has adopted since 1902 a special programme of encouraging the development of the industry. According to this programme the output of sugar may easily be increased fivefold of the amount which is about 80 million *kin*.

d. Fibre-Plants.

1. China Grass—This plant, though planted everywhere in the island, is principally grown in northern Formosa. The greater part of the output goes to China and Japan proper. The export returns for recent years are as follows:—

Year.	*kin.*	Year.	*kin.*
1901	2,567,807	1898	2,712,791
1900	2,314,647	1897	2,659,882
1899	1,915,663	1896	2,037,443

2. JUTE.—This is of less importance to the above, being inferior in quality and less valuable. The output and export are shown below:—

Year.	Output. Area (*ko*).	Output (*kin*).	Export *kin.*
1901	1,411.18	1,650,481	532,839
1900	1,155.44	1,481,548	205,330
1899	1,494.63	1,442,022	138,992
1898	1,386.27	1,104,635	97,181

e. DYE-PLANTS.

1. WILD INDIGO.—The plant is principally cultivated in northern Formosa, and, though its export has dwindled recently, there is much hope of the cultivation of this plant growing more extensive, as it yields excellent dye-stuff. The output is as follow:—

Year.	Area (*ko*).	Output (*kin*).
1900	607.99	815,068
1899	98.50	57,395
1898	132.00	88,200

Some Japanese are making indigo-balls with this indigo, and the output of the balls amounted to 59,625 *kin*, valued at 24,508 *yen* in 1898 and to 52,563 *kin* valued at 34,863 *yen* in 1899.

TREE INDIGO.—This plant is also a principal product of northern Formosa. Acreage and output are as follows:—

Year.	Acreage (*ko*).	Output (*kin*).
1900	2,424.81	7,109,214
1899	2,762.90	5,493,122
1898	2,208.40	3,004,674

The "mud-balls" made with this plant were produced to the extent of 1,225,998 *kin* valued at 74,836 *yen* in 1899 and 1,701,662 *kin* valued at 97,847 *yen* in 1898.

f. TOBACCO.

Though the cultivation of tobacco dates a long time back in the

island, yet the industry has not prospered to the extent which might be expected from its natural adaptation to its climate, chiefly owing to the fact that cheap tobacco used to come in from China, and also because the natives smoke opium to a large extent. The greater profit which accrued to tea-planting must also be responsible for this strange phenomenon. The acreage and output of tobacco are as follows:—

Year.	*ko.*	*kin.*
1901	654.40	682,917
1900	240.18	606,620
1899	180.67	196,976
1898	248.49	490,900

The import, chiefly from China and Japan proper, makes these figures:—

Year.	*yen.*	Year.	*yen.*
1901	357,901	1898	1,386,135
1900	202,042	1897	819,623
1899	478,490	1896	430,279

Attempts are being made by several tobacco-growers from Japan proper to cultivate foreign varieties in southern Formosa.

B. Live Stock.

Swine is by far the most important item of stock-farming in the island, the natives being very fond of pork. The supply being inadequate to meet the demand, over 100,000 swine used to come in every year from China. Even at present about 30,000 heads are imported. The Government have been taking pains to encourage the development of this industry and have imported superior breeds of swine and cattle from abroad. The native breed of swine consists solely of the black-haired variety, and by way of experiment a number of white-haired Yorkshire have been imported. The number of various kinds of live-stock, existing in the island, is given in the following table.

Year.	Buffalo.	Cattle.	Swine.	Goat.	Horse.
1900	167,687	63,619	635,183	97,141	39
1901	168,283	66,937	700,902	10,804	34

POULTRY.

Year.	Fowl.	Duck.	Goose.
1900	2,607,898	661,408	55,135
1901	2,589,700	557,002	62,784

Epidemics have been inflicting havoc on the industry, the diseases generally brought with swine imported from China. Since 1898 the authorities have enforced prevention measures. The following about epidemic returns will give some idea of the extent of damage done by the deseases.

Year.		No. of cases.	Killed by Disease or Slaughtered.	No. of Recovery.
From Jan.—May 1902...	Cattle.	2,028	1,858	148
	Swine.	702	529	129
1901	„	1,730	1,584	121
	„	1,205	1,117	69
1900	„	177	153	19
	„	2,513	2,237	276
Total	„	3,935	3,595	288
	„	4,420	3,883	474

The slaughter returns are not accurate, as slaughters carried out in remote places are not duly reported. The following may however prove useful.

Year.	No. of Slaughter-House.	Buffalo.	Cattle.	Swine.	Goat.
1901	168	6,253	5,037	242,786	13,979
1900	125	7,204	5,149	274,750	22,209

There was a small number of horses slaughtered but it was insignificant.

III. FISHERY.

A. Ordinary Fishery.

Fishery is still highly primitive in the island and this kind of natural resources that abound along the coast is practically left unutilized. According to the latest available returns, the number

of families engaged in fishery, side by side with other pursuits, is as follows:—

Number of Families	11,143	Males	23,601
		Females	11,989
		Total	35,590

Those families pursuing the business as their principal occupation number as follows:—

Number of Families	7,112	Males	14,281
		Females	8 264
		Total	22,545

Both fishing-boats and gears are highly imperfect. One thing that is noteworthy is that artificial fecundation is being carried to some extent.

B. Salt Manufacture.

1. Salt Administrations.—Salt was a state monopoly while the island was ruled by China, but on the advent of the new régime, the system was abandoned and salt manufacturers were left free. The result of this new departure was a failure, and inflicted harm on both the manufacturers and the consumers. This was due to the fact that the removal of official interference was at once followed by a large increase of the number of manufacturers who were, in consequence, obliged to sell their goods at a very narrow margin of profit or even by incurring loss. Then, whereas formerly something like a uniform price was maintained throughout the island, with the adoption of the new system, people residing in remote districts had to pay a far higher price on account of cost of transport for this important article of living. This contrast between the old and new arrangements will be made clear from the following comparison of the prevailing prices under the two systems:—

	Price per 100 *Kin.*
Official Price in Days of Chinese Rule.	1.40 to 1.60 *yen.*
Average Market Quotation under new Rule.	0.70 to 9.00 *yen.*

In view of those circumstances, the Government decided to

review the monopoly system and this was enforced from May 15th, 1899.

2. Government Monopoly.—At present the Salt Monopoly Offices are established at nine different places and they have charge of the purchase of salt.

The sale is entrusted to the men belonging to the Salt Seller's Guild, which exists under official control. The Guild is organized solely with natives and is made to maintain selling offices at 20 places and branch offices at 79 places, the central office being located at Taihoku. The Guild is also made to undertake by contract the business of transporting salt.

3. Salt-Fields.—The area of salt-fields has increased with great strides since the resuscitation of the monopoly system, for while the fields that were left in waste shortly after the adoption of the free competition method have been revised with the return of brighter hope, while a large number of fields has also been newly laid out under official sanction. At present about 515 *cho* are engaged in manufacture, while 339 *cho* are about to be laid out. Then permission has been given to construct new fields measuring altogether 847 *cho*. These figures show a great advance compared with what was existing in the time of Chinese rule, when the fields measured only about 400 *cho*.

IV. FORESTRY.

A. General Condition of Forests.

1. Extent of Forests.—The forests exist in the range of hills longitudinally traversing the island and also in the aborigines' quarters situated in the eastern region. Though the exact extent of all those wooded areas is not yet known, it may be roughly estimated at 2,116,000 *cho* at least, that is to say, about 60 per cent. of the whole area of the island. The natural resource of this particular description must be considered as immense, when it is remembered that vast primeval forests exist in many parts of the region of the aborigines.

2. Principal Species.—The sylvan flora of the island being still imperfectly known, it is not possible to give any definite list of principal timber-trees in the island. Some of those trees have already been mentioned in the paragraph of flora given in the preceding part of this section.

B. Camphor.

Camphor being one of the most important wood products in the island, deserves mention at some length. Besides it is in Formosa that the world's supply of natural camphor is obtained.

1. Condition Existing before the Enforcement of the Monopoly.—The camphor administration was at first mainly conducted along the old usage that had prevailed before the island was annexed to Japan. The authorities issued license to refiners, restricted the districts where the refining could be carried on but left the licensed persons to make free use of camphor trees within those districts. But this method did not keep proper balance between supply and demand, for the refiners, who in most cases had only a limited capital at their disposal, were led to produce a larger amount than the market required and therefore to keep the price very low. What was far more serious was the fact that the absence of control of the felling of the trees naturally tempted the refiners to use only those portions of the trees that yield the largest percentage of camphor with the minimum of trouble and expense. The waste of the trees was therefore extensive. Then the refiners, in order to increase the margin of profit, too often resorted to the fraudulent devise of mixing camphor with rubbish. The system therefore was a grave defect so far as the interest of refiners and the proper utilization of camphor were concerned. In those days therefore the camphor market stood so low that the refiners could barely pay the tax of 10 *yen* for camphor and 3 *yen* for camphor oil, each per 100 *kin*.

2. Government Monopoly.—All those facts convinced the authorities to convert the camphor industry into a state monopoly and the new departure was made on August 5th, 1899. By this system the authorities put a limit on the quantity of manufacture,

the season of manufacture, the districts where it could be carried out, and the number of kilns. Moreover certain rate of prices was fixed for the trees.

The enforcement of the monopoly system, though at first complained of by a section of the people who were deprived temporally of means of subsistence, has proved a great boon to such of those who, in virtue of their established character, were allowed to engaged in the work of refining, for whereas formerly the lion's share of profit of the refining business went to the pocket of capitalists, the business was for the first time placed on a firm footing. At present the refiners have simply to sell their goods to the Government at the proper rate determined according to the state of the market, while all the troubles and expense involved in providing against the raid of hostile aborigines residing in the vicinity have now been transferred to the shoulders of the Government.

The enforcement of the monopoly has metamorphosed the quality of Formosa camphor, for the refiners, who are under strict order to sell their half-refined camphor to the Government alone, get a higher price, as their quality is superior.

3. Monopoly Agent.—The half-refined goods thus procured by the authorities are mainly sold to a monopoly agent, at present a British firm, which is obliged to observe various conditions incidental to this sole privilege, besides depositing with the Government a security amounting to 1,900,000 *yen*.

4. Mode of Refining.—The refining process that was formerly prevailing in the island was quite primitive. Soon after the annexation of the island, the Japanese process was introduced and has at last entirely superseded the native method. To give one significant illustration of the superiority of the new process over the native one, it may be observed that the native refiners were first enabled by that mode of refining to obtain camphor oil. This important by-product formerly went with the waste.

5. Supply of Raw Material.—Camphor-trees being found in the primeval forests which have not yet been accurately explored, it is impossible to estimate the supply of raw material that exists in the island. It may, however, be stated that the supply of camphor-trees

can last 40 or 50 years according to the present rate of conversion. The supply may also be expected to be permanent as the authorities have been planting millions of young camphor plants in suitable places.

V. MINING.

1. General Remarks.—The mineral resources of Formosa at present consist of gold, coal, sulphur and petroleum with a greater or smaller quantity of building stones.

2. Gold.—Gold exists both in the shape of viens or rather lode and of alluvial deposits.

The lodes occur in Tertiary formation. At present seven gold mines are worked, but of these the mines at Kinkwaseki, Kyufun and Botan are the most important. The mining in those mines is carried on partly in Western style and partly in the old simple style.

Alluvial deposits occur in the vicinity of all those mines and are especially rich along the course of the river Kelung. They are exclusively worked by natives who attend to their business in a rude simple style. However the output of placer digging sometimes surpasses that of regular mines, as may be seen from the following returns.

Year.	Output of Gold Mine. (*momme*).	Output of Placer-digging. (*momme*).	Total. (*momme*).
1899	32,610.00	7,148.63	39,758.63
1900	92,451.38	9,473.40	101,924.78
1901	15,422.54	127,785.14	283,207.68

3. Coal.—Coal occur in Tertiary formation, and is found throughout the island, though richer towards the north and poorer towards the south.

In general there are nine seams, each separated from the other by a deep layer of sand-stones and shales. The seam is in most cases comparatively thin, generally 2 to 4 feet.

The mining is at present left to native workers who extract the mineral on the old laborious style.

Data about coal-mining are as follows:—

	1899.	1900.	1901.
Number of Concession	39	41	42
Total Area of Concession (*tsubo*) ...	3,266,320	3,970,563	3,934,742
Output (*ton*)...	29,811	41,944	62,703

4. Sulphur.—Sulphur deposits occur, to mention only those that are important, in the neighborhood of Mt. Daiton, situated due north of Taihoku, and on Kizan island in the jurisdiction of Gilan. Data are as follows: –

	1899.	1900.	1901.
Number of Concession	7	4	5
Total Area of Concession (*tsubo*) ...	332,795	249,705	294,205
Output (*kin*)	958,100	1,231,168	2,732,860

5. Petroleum.—Indications of the presence of petroleum veins are discovered along the elevated districts bordering on the central mountain ranges and the plains contiguous to them, but as yet petroleum is a potential source of wealth and is still left practically unexploited.

VI. TRADE.

1. General Remarks.—On account of the lack of regular shipping facilities between the island and the opposite coast of China, imperfect communication in the interior, absence of ordinary banking organs and of a reliable and accurate system of weights and measures, trade in Formosa was in a backward state, and it was only after it came under Japanese rule that the change for the better has markedly began to manifest itself, for the new Government, anxious to push this important factor of national prosperity to a level of the mother country, has energetically endeavored to remove all those causes standing in the way of its development.

2. Trade with Japan Proper.—Trade with the mother country may be said to date from 1897, by which time order had been to a large extent restored in the island. The following returns give a survey of the progress of this particular branch of Formosan trade in recent years:—

EXPORT TO MOTHER COUNTRY.

(Value in *yen*).

Item.	1901.	1900.	1899.	1898.	1897.
Oolong Tea	684,749	482,508	275,483	53,218	18,020
Rice	1,024,332	93,118	62,622	1,146,489	74,616
Brown Sugar	2,243,452	1,473,834	1,620,275	1,556,037	1,194,000
White Sugar	49,145	64,003	128,602	46,227	—
Salt	87,447	49,958	—	24,739	747
Tengusa	36,608	32,275	28,997	27,247	13,968
Camphor	1,571,496	945,383	292,261	334,830	180,108
Camphor Oil	1,325,836	962,643	1,074,529	540,949	437,626
Hides	60,869	57,058	22,333	15,608	4,037
Others	262,018	241,326	145,369	397,432	181,524
Total	7,345,956	4,402,110	3,650,475	4,142,777	2,104,648

IMPORT FROM MOTHER COUNTRY.

(Value in *yen*).

Item.	1901.	1900.	1899.	1898.	1897.
Railroad Material	242,162	617,520	—	—	—
Other Machines	130,023	144,104	114,558	16,721	93,071
Metals	128,771	39,853	2,023	—	615
Iron Ware	115,674	129,193	165,166	15,120	52,147
Other Metallic Ware	110,703	24,884	—	—	—
Rice	506,502	545,410	868,713	335,672	286,773
Beans etc.	99,570	75,582	28,549	55,863	261,916
Cuttle-fish	74,172	47,835	—	1,978	—
Dried and Salted Fish	163,911	125,405	98,522	3,964	1,324
Bonito and others	103,464	22,046	—	7,254	—
Soy	187,955	132,943	162,777	97,875	35,831
Miso	75,778	58,673	—	30,199	—
Grocer's Goods	59,757	79,007	93,130	52,383	—
Pickled Provisions	64,733	75,524	36,926	18,806	4,797
Tinned Provisions	100,464	123,240	305,506	76,397	64,635
Shoes and Foot-gears	66,672	40,553	22,347	4,372	—
Clothes and accessories	68,436	4,074	—	9,000	—
Medical Stuff	110,420	110,340	283,832	387,987	26,729
Glass and Glass-Ware	68,065	53,107	26,476	9,965	1,880
Petroleum and Oils	103,709	120,334	56,005	6,214	900
Paper	186,774	118,055	63,420	59,950	15,687
Woven Goods	837,082	367,998	280,317	114,696	59,795
Cigarettes	490,993	512,585	252,208	95,617	52,359
Cut Tobacco	121,134	—	—	—	—
Sake	58,840 661,429	625,805	586,514	478,328	163,449

Item.	1901.	1900.	1899.	1898.	1897.
Beer	213,755	212,470	165,212	123,561	19,827
Coal and Cokes	63,186	18,804	40	4,368	—
Boards	785,967	1,220,449	587,706	255,556	67,642
Cement and Ash...	98,877	250,248	67,790	10,755	8,300
Matches	198,485	210,121	20,412	4,078	260
Others	2,484,783	2,349,262	3,733,675	1,990,082	2,505,736
Total	8,782,258	8,439,032	8,011,826	4,266,768	3,723,721

3. Foreign Trade.—China declared in 1858 to open ports in Formosa to foreign trade, and in 1863 the four ports of Takao, Anpei, Tamsui and Kelung were opened. The following table reviews the progress of trade in those ports, that is practically in the whole of the island, since their opening to trade in 1863. The figures, however, include the volume of trade with the mother country which was at first represented by China and lately by Japan.

FOREIGN TRADE UNDER CHINESE RULE.

Year.	Tamsui and Kelung (tael).	Takao and Anpei (tael).	Total.
1863	247,366	347,867	595,233
1864	659,881	927,405	1,587,286
1865	710,628	1,893,455	2,604,083
1866	862	1,862,313	2,724,567
1867	782,339	1,832,648	2,614,987
1868	822,846	1,296,679	2,119,525
1869	759,657	1,537,796	2,797,455
1870	985,766	2,144,899	3,130,665
1871	1,239,820	2,277,961	3,517,781
1872	1,493,944	2,159,280	3,653,224
1873	1,445,910	1,829,898	3,275,808
1874	1,626,945	2,303,229	4,266,101
1875	1,842,221	2,279,470	4,121,691
1876	2,410,370	2,698,320	5,108,690
1877	2,776,597	2,837,714	5,598,311
1878	3,089,309	2,493,383	5,582,692
1879	3,633,186	3,750,925	7,384,111
1880	3,926,995	4,527,544	8,454,539
1881	4,165,880	4,059,311	8,225,191
1882	4,018,723	3,170,667	7,189,390
1883	3,561,682	3,772,996	7,334,678
1884	3,653,416	3,084,608	6,737,484
1885	4,537,465	2,478,681	7,016,146

Year.	Tamsui and Kelung (tael).	Takao and Ampei (tael).	Total.
1886	5,462,503	2,583,625	8,046,128
1887	5,641,990	2,762,538	8,404,528
1888	5,701,185	2,862,020	8,563,205
1889	5,294,796	2,746,464	8,041,260
1890	5,579,713	3,575,723	9,155,436
1891	5,352,554	3,131,260	8,483,814
1892	5,796,284	2,932,311	8,728,595
1893	7,880,204	3,295,869	11,176,073

The share which the staple exports and imports play in the respective volume of Formosan trade may be gathered from the following two tables :—

STAPLE EXPORTS OF FORMOSA.

(unit of *yen*).

	1901.	1900.	1899.
Oolong Tea	2,996,002	4,186,702	4,723,450
Wrapper Tea	505,061	630,948	572,345
Rice	1,132,419	2,276,359	1,265,727
Sesame Seed	213,883	61,341	31,179
Brown Sugar	678,369	452,723	1,216,061
White Sugar	352,944	216,521	370,884
Lungngaus	91,617	15,872	65,642
	124,618	29,748	95,725
Camphor	789,290	1,385,645	1,732,739
Ginger	91,186	128,732	125,587
China Grass etc.	382,798	368,654	298,406
Oil-Cakes	124,476	77,203	101,872
Coal	134,654	95,905	75,213
Others	681,476	644,924	440,085
Total	8,298,800	10,571,285	11,114,921

	1898.	1897.	1896.
Oolong Tea	5,696,841	6,445,120	5,854,019
Wrapper Tea	526,733	460,910	—
Rice	2,168,339	1,799,763	913,291
Sesame Seed	114,951	153,790	35,116
Brown Sugar	1,417,921	1,146,820	1,093,538
White Sugar	566,454	347,221	435,921
Lungngaus	46,311	101,153	125,238
	83,468	50,288	144,071
Camphor	961,945	1,329,116	2,247,930
Ginger	84,031	52,831	29,563
China Grass etc.	378,885	353,400	219,078
Oil-Cakes	140,957	69,727	29,463
Coal	60,550	23,885	16,541
Others	599,779	425,264	258,449
Total	12,827,189	12,759,293	11,402,226

STAPLE IMPORTS OF FORMOSA. (unit of *yen*).

	1901.	1900.	1899.
Flour	339,728	355,541	334,655
Salt-fish	113,045	89,201	153,723
Dried Mushroom	56,034	51,368	38,033
Marcaroni	86,646	95,678	113,577
Shoes (Chinese)	70,264	58,361	62,316
Ginseng	70,471	53,436	58,088
Opium	2,310,424	3,392,602	2,775,809
Beans	76,805	112,150	107,848
Rice	229,832	167,382	2,584,968
Iron Pan	88,537	69,636	71,792
Lead (lump)	102,680	111,080	98,904
Petroleum	841,069	1,199,056	694,217
Paper	228,445	307,825	228,461
Refined Sugar (1st class).	179,692	184,795	165,250
Refined Sugar (2nd class)	221,551	105,976	53,640
Ginned Cotton	67,891	76,024	66,408
Cotton Satin	197,495	157,060	9,033
T-cloth	165,249	165,760	126,482
Shirting	278,103	293,556	221,843
China Cotton Fabrics ...	685,928	689,637	611,611
Velvet	118,842	110,474	129,106
Hempen Fabrics	147,016	101,361	89,324
Rhamie Fabrics	142,178	165,523	201,100
Cut Tobacco	113,931	84,755	449,981
Leaf Tobacco	242,683	116,891	26,259
Swine	408,170	562,126	660,549
Oil-Cakes	74,797	97,552	38,248
Boards for Tea Chest ...	87,604	84,462	84,218
Other Boards	430,281	538,182	525,312
Bricks	5,212	68,647	58,115
Fire-Works	56,589	54,406	37,272
Packing-Mats	74,881	26,840	48,628
Porcelain and Earthen-Ware	133,663	121,138	107,416
Card Board	384,277	337,070	207,724
Incense Sticks	73,137	71,819	64,037
Others	3,859,624	3,293,276	2,787,326
Total	12,809,794	13,570,663	14,273,092

	1898.	1897.	1896.
Flour	338,621	217,684	218,898
Salt-fish	170,733	116,081	72,767
Dried Mushroom	78,939	63,552	36,382
Marcaroni	189,839	124,961	60,441
Shoes (Chinese)	110,796	84,055	38,968
Ginseng	86,761	125,355	110,315
Opium	2,044,392	1,570,347	1,164,856
Beans	152,383	113,299	91,584
Rice	870,609	182,248	765,834
Iron Pan	78,779	55,460	—
Lead (lump)	105,154	87,050	79,633
Petroleum	714,851	723,673	370,671
Paper	284,866	332,940	190,617
White Sugar (1st class).	413,998	270,672	89,804
White Sugar (2nd class).	—	—	—
Ginned Cotton	107,027	103,340	5,043
Cotton Satin	58,260	30,654	16,006
T-cloth	202,432	173,535	220,914
Shirting	322,586	342,979	258,169
China Cotton Fabrics ...	1,370,877	1,040,924	513,453
Velvet	125,639	139,074	96,132
Hempen Fabrics	134,188	60,847	12,034
Rhamie Fabrics	319,583	385,457	86,997
Cut Tobacco	1,357,906	788,641	411,950
Leaf Tobacco	14,427	13,588	1,539
Swine	1,009,497	734,313	179,008
Oil-Cakes	26,521	24,144	29,293
Boards for Tea Chest ...	86,640	88,258	74,466
Other Boards	719,643	418,643	144,939
Bricks	53,295	34,930	9,915
Fire-Works	84,295	68,620	23,550
Packing-Mats	48,334	48,010	24,979
Porcelain and Earthen-Ware	164,772	122,372	37,616
Card Board	233,759	116,353	—
Incense Sticks	91,711	82,787	46,704
Others	4,703,076	3,874,431	3,102,506
Total	16,875,404	12,659,298	8,631,001

VII. FINANCE.

1. Revenue.—The principal sources of revenue do not differ much as to kind from those that were prevailing before the island was converted into a territory of Japan. Nor do the rates of the various kind of taxes differ much from what they were in olden days. At present the principal items of ordinary revenue are taxes on land, tea, mining, excise on sugar, percentage fee on the transfer and mortgage of real estate, export dues, customs tariff, tonnage dues, receipts from Government undertakings and a few others.

The relative importance of those sources of revenue is shown in the following table:—

REVENUE (From 1896 to 1902 Fiscal Year).

I. ORDINARY REVENUE.

(unit of *yen*).

Item.	1896.	1897.	1898.	1899.
Inland Revenue	1,363,736	1,891,736	1,979,089	1,979,392
Land Tax...	752,698	835,650	782,058	841,955
Tax on Tea	—	412,143	410,198	392,714
Tax on Sugar Refining ...	201,298	242,004	260,715	224,813
Tax on Vehicle	—	—	—	—
Excise on Sugar	—	—	—	—
Camphor Tax	399,137	353,645	419,809	379,188
Tax on Ship	—	—	—	—
Tax on Mining	10,602	17,675	20,644	18,231
Registration Fee	—	30,615	85,672	—
Percentage Fee	—	—	—	115,412
Export Due	—	—	—	7,075
Custom Tariff	665,335	732,276	907,864	1,481,407
Export Tariff	279,872	262,400	272,539	307,234
Import Tariff	385,463	469,876	635,325	1,174,372
Tonnage Due	—	—	—	—
Receipts from Gov. Works and Undertakings	563,145	2,513,900	4,424,950	6,570,757
Post and Telegraph ...	225,492	334,049	369,019	441,390
Salt Monopoly	—	—	—	270,827
Camphor Monopoly ...	—	—	—	917,877
Opium Monopoly	—	1,640,210	3,467,337	4,249,577
Forests	—	1,419	3,481	19,966
Hospitals...	15,631	32,646	45,088	61,404
Railroad	89,162	231,045	288,518	305,851

Item.	1896.	1897.	1898.	1899.
Miscellaneous Custom Receipts	29,071	32,099	27,871	30,991
Convict Work...	—	3,436	16,743	17,232
Tenant Rate	202,894	229,546	200,278	209,916
Hire of Gov. Property ...	892	9,151	6,609	5,721
Stamp Receipts	—	—	—	53,220
Stamp Receipts	—	—	—	53,220
Cash Receipts...	—	—	—	—
Various Licenses and Fees...	—	—	—	750
Miscellaneous Receipts ...	119,604	177,965	181,745	73,123
Total of Ordinary Revenue	2,711,822	5,315,879	7,493,650	10,158,651

Item.	1900.	1901.	1902.
Inland Revenue	1,629,033	1,906,312	2,094,049
Land Tax	912,922	869,003	861,791
Tax on Tea	405,267	383,190	402,757
Tax on Sugar Refining	178,144	107,768	—
Tax on Vehicle...	3,720	243	—
Excise on Sugar	—	372,190	689,419
Camphor Tax	—	—	—
Tax on Ship	—	—	—
Tax on Mining	11,281	19,999	21,281
Registration Fee	—	—	—
Percentage Fee...	92,125	129,754	107,724
Export Due	15,571	24,163	11,077
Custom Tariff	1,567,801	1,534,533	1,499,167
Export Tariff	390,668	352,489	323,414
Import Tariff	1,177,133	1,182,044	1,175,753
Tonnage Due	15,309	11,846	15,306
Receipts from Gov. Works and Undertakings	9,692,796	8,063,584	8,873,079
Post and Telegraph	511,174	536,842	628,307
Salt Monopoly	358,333	510,202	740,411
Camphor Monopoly...	3,752,267	3,253,391	2,385,329
Opium Monopoly	4,234,979	2,804,894	3,917,086
Forests	62,990	81,573	150,372
Hospitals	83,119	94,465	90,479
Railroad	412,300	526,086	722,500
Miscellaneous Custom Receipts ...	—	—	—
Convict Work	15,437	26,329	16,070
Tenant Rate	255,317	224,214	216,341
Hire of Gov. Property	6,875	5,582	6,184
Stamp Receipts	54,732	62,799	71,152

Stamp Receipts...	54,732	61,799	71,155
Cash Receipts	—	1,000	—
Various Licenses and Fees	12,166	5,101	11,901
Miscellaneous Receipts	90,681	130,494	86,041
Total of Ordinary Revenue... ...	13,062,520	11,714,673	12,650,695

2. EXTRAORDINARY REVENUE.

Item.	1896.	1897.	1498.	1899.
Sale of Gov. Property ...	—	8,338	8,114	3,192
Land...	—	468	—	—
Buildings...	—	215	—	—
Articles	—	6,848	8,114	3,192
Ships...	—	805	—	—
Supplementary Fund	—	5,959,048	3,984,540	6,200,000
Transferred from Central Treasury	—	5,959,048	3,984,540	3,000,000
Transferred from Public Loans	—	—	—	3,200,000
Transferred from Previous Account	—	1,098,070	795,655	1,064,773
Total of Extraordinary Revenue	—	7,065,456	4,788,310	7,267,966
Grand Total of Revenue...	2,711,822	12,381,336	12,281,960	17,426,618

Item.	1900.	1901.	1902.
Sale of Gov. Property	5,493	5,405	5,556
Land	—	—	—
Buildings	3	—	—
Articles	5,013	5,556	5,556
Ships	476	—	—
Supplementary Fund	8,098,611	7,251,072	7,199,763
Transferred from Central Treasury...	2,598,611	2,386,689	2,459,763
Transferred from Public Loans ...	5,500,000	4,864,382	4,740,000
Transferred from Previous Account ...	1,103,069	795,181	—
Total of Extraordinary Revenue...	9,207,174	8,051,659	7,205,319
Grand Total of Revenue	22,269,695	19,766,333	19,856,014

Note:—Figures for 1902 represent estimate, those for all others being settled account.

2. EXPENDITURE. — It is unavoidable that the expenditure should advance in such a newly acquired territory as Formosa, where the Government is confronted with the necessity of undertaking many new things involving big disbursements and also of undoing other things which the previous mal-administration of the Chinese Government had inflicted on the island. Some idea about this point may be gathered from the following table :—

EXPENDITURE (From 1896 to 1902 year).

I. ORDINARY EXPENDITURE.

(unit of *yen*).

	1896.	1897.	1898.	1899.
Civil Administration	3,183,394	4,731,893	4,363,189	—
Formosan Temple...	—	—	—	—
Governor-General's Office ...	—	—	—	522,352
Local Offices	—	—	—	962,834
Police Offices	—	—	—	1,409,429
Police and Gaolers Training School	—	—	—	97,719
Prisons	—	—	—	274,054
Hospitals	—	—	—	198,511
Medical Schools	—	—	—	27,962
Education	—	—	—	131,894
Custom Houses	182,878	184,552	185,938	226,809
Communication	733,530	1,528,247	1,380,628	875,119
Observatories...	—	—	—	22,444
Nautical Signals	—	—	—	50,671
Quarantine	—	—	—	—
Ships and Crews	—	—	—	—
Telephone Service	—	—	—	—
State Railroad	—	—	—	417,257
Monopoly Offices	1,801,585	1,216,232	1,993,520	4,668,637
Formosan Undertaking ...	—	—	—	23,333
Loan Redemption Fund ...	—	—	81	137
Various Refundments	—	37,811	80,631	16,912
Emergency Relief Fund ...	—	—	—	—
Reserves	—	—	—	—
Doctors in Charge of Public Hygiene	—	—	—	34,785
Total of Ordinary Expenditure	5,901,387	7,698,737	8,003,990	10,289,481

	1900.	1901.	1902.
Civil Administration	—	—	—
Formosan Temple	—	18,000	18,000
Governor-General's Office	509,433	575,987	745,280
Local Offices...	959,101	918,827	704,522
Police Offices	1,572,209	1,714,634	1,690,935
Police and Gaolers Training School ..	89,169	98,225	105,766
Prisons	424,736	494,710	543,019
Hospitals	231,169	241,379	259,759
Medical Schools	33,350	38,106	41,049
Education	152,800	178,504	130,658
Custom Houses	231,951	238,426	282,958
Communication	963,508	995,249	1,086,526
Observatories	32,490	25,888	28,380
Nautical Signals	58,653	50,620	67,088
Quarantine	19,182	24,596	27,365
Ships and Crews	3,521	7,705	11,954
Telephone Service	—	55,575	75,482
State Railroad	497,855	682,778	724,021
Monopoly Offices	5,531,031	4,507,585	4,907,140
Formosan Undertaking	338,935	563,768	1,000,303
Loan Redemption Fund	85	76	98
Various Refundments	10,071	5,196	8,000
Emergency Relief Fund	50,000	50,000	50,000
Reserves	—	—	400,000
Doctors in Charge of Public Hygiene.	33,999	33,911	—
Total of Ordinary Expenditure ...	12,017,296	11,839,073	13,245,073

2. EXTRAORDINARY EXPENDITURE.

	1896.	1897.	1898.	1899.
Special Undertaking Funds...	—	—	—	2,744,998
Railroad Construction and Improvement...	—	—	—	1,975,096
Harbor Construction of Kelung	—	—	—	94,828
Temporary Land Surveying	—	—	—	440,865
Construction of Prisons ...	—	—	—	111,185
Construction of Official Residences	—	—	—	123,022
Public Undertaking	3,526,827	3,100,786	1,597,671	1,768,143
Encouragement of Sugar Industry	—	—	—	—
5th Domestic Exhibition.	—	—	—	—
Animal Epidemic	—	10,217	6,858	7,390

	1896.	1897.	1898.	1899.
Sanitary Expense	—	39,868	39,517	39,766
Industrial Fund	—	—	—	—
Compilation Expense	11,854	9,246	4,805	15,257
Subsidies	59,999	514,500	514,500	700,000
Navigation...	59,999	514,500	514,500	700,000
Schools	—	—	—	—
Formosan Railroad Stores ...	—	—	—	—
Formosan Temple Festival...	—	—	—	—
Epidemic Diseases	92,027	23,726	84,107	36,273
Natural Calamities	—	128,628	964,197	657,668
Policing Aboligines Frontiers.	—	—	—	—
Paris Exhibition	—	—	1,538	38,006
Rewards Granted in the Suppression of Armed Raiders.	—	—	—	26,563
Reshipping Chinese who arrived without Permission...	—	2,996	—	—
Relief Fund	50,000	—	—	—
Total of Extraordinary Expenditure	3,750,709	3,829,970	3,213,196	6,034,067
Grand Total of Expenditures.	9,652,098	11,528,708	11,217,187	16,323,548

	1900.	1901.	1902.
Special Undertaking Funds	5,880,134	4,939,233	4,740,000
Railroad Construction and Improvements	4,524,894	2,642,903	2,500,000
Harbor Construction of Kelung ...	346,436	1,186,666	490,000
Temporary Land Surveying	650,845	905,501	1,600,000
Construction of Prisons	164,503	121,790	150,000
Construction of Official Residences.	193,454	82,371	—
Public Undertaking	2,369,884	1,299,771	586,241
Encouragement of Sugar Industry ...	—	—	149,769
5th Domestic Exhibition	—	—	20,000
Animal Epidemic...	9,877	13,934	15,000
Sanitary Expense...	39,688	28,465	40,000
Industrial Fund	31,216	178,340	240,000
Compilation Expense	15,113	13,965	15,732
Subsidies	798,069	818,599	667,000
Navigation	795,969	798,599	640,000
Schools	2,100	20,000	27,000
Formosan Railroad Stores	—	—	137,199
Formosan Temple Festival...	—	5,980	—
Epidemic Diseases	—	17,175	—

	1900.	1901.	1902.
Natural Calamities	253,917	211,207	—
Policing Aborigines Frontiers	37,071	—	—
Paris Exhibition	22,544	—	—
Rewards Granted in the Suppression of Armed Raiders	—	—	—
Reshipping Chinese who arrived without Permission	—	—	—
Relief Fund	—	—	—
Total of Extraordinary Expenditure	9,457,216	7,526,672	6,610,941
Grand Total of Expenditure	21,474,513	19,365,745	19,856,014

A glance at the two foregoing tables will show that Formosa can not yet claim to be financially independent, and that it is obliged to seek help from the mother country. However the prospect of the island finance is quite bright, as judged from what it has experienced so far. The subsidy from the mother country shows a gradual falling-off, from over 6,900,000 *yen* in 1896 to only 2,300,000 *yen* approximately in 1902, for the supplementary fund procured by means of loans to meet the demand of useful public undertakings should properly be left out of account in this calculation. Comparison made between ordinary revenue and ordinary expenditure must be considered as decidedly satisfactory, for while in the year 1899 the two were practically balanced, in the following two years the revenue exceeded the other account. The account for 1902, being an estimate, can not give a definite illustration, though the expenditure is estimated to exceed the revenue by about half a million *yen*. It may confidently be expected therefore that, when all such undertakings, as construction of railroad, adjustment of land and many other useful enterprises which at present constitute principal outlays are completed, Formosan finance is sure to show a bright record.

LOCAL FINANCE.

REVENUE (From1898 to 1902 Fiscal Year).

I. ORDINARY REVENUE.

(unit of *yen*).

	1898.	1899.	1900.	1901.	1902.
Local Taxes	747,850	1,590,854	1,826,456	2,045,474	1,952,220
Land Rate	215,552	454,026	515,823	570,879	558,632
House Tax	252,394	550.733	628,478	720,230	707,842
Business Tax	129,685	323,845	365,745	368,811	355,616
Miscellaneous Tax ...	99,835	239,589	276,569	341,639	320.077
Miscellaneous Receipts.	383	22,658	39,839	43.913	10,050
Total	747,850	1,590,854	1,826,456	2,045,474	1,952,220

2. EXTRAORDINARY REVENUE.

	1898.	1899.	1900.	1901.	1902.
Carried from Previous Account	—	40,704	118,308	—	—
Transferred from Previous Account	—	121,714	54,732	337,797	261,620
Donations	410	2,500	9,741	10,105	—
Total	410	164,918	182,783	347,902	261,620
Grand Total	7,48,260	1,755,773	2,009,239	2,393,377	2,213,841

LOCAL FINANCE.

EXPENDITURE.

1. ORDINARY EXPENDITURE.

(unit of *yen*).

	1898.	1899.	1900.	1901.	1902.
District Offices	89,747	197,529	252,508	278,939	307,800
Police Offices...	339,802	887,889	1,836,971	1,882,825	2,173,554
Communal Offices	67,016	148,307	153,933	159,921	157,834
Doctors in Charge of Public Health	—	35,480	54,385	59,614	70,870
Education	46,724	135,740	200,731	247,393	303,794
Hygiene	9,104	40,604	52,025	77,921	98,889
Industry	4,974	22,758	30,078	45,602	40,002
Reclamation of Aborigines ...	—	4,002	11,205	8,837	30,613
Meteorological Signals	—	100	985	1,086	1,610
Relief	1,959	11,308	9,670	12,301	11,867
Collection of Local Taxes ...	18,425	34,053	62,397	63,735	50,559
Local Administration	—	—	—	1,327	—
Pension to Retired Teachers.	—	—	636	713	1,247
Calamity Fund	—	—	83,698	84,436	91,902
Refundments and Non-collectables	27	5,092	7,972	13,620	5,229
Reserves	—	—	—	—	35,000
Government Offices	14,581	—	—	—	—
Total	592,364	1,522,868	1,757,199	2,938,225	3,380,774

2. EXTRAORDINARY EXPENDITURE.

	1898.	1899.	1900.	1901.	1902.
Repairs, Construction and Public Works	34,181	174,647	318,537	394,128	71,138
Animal Epidemic	—	381	668	764	1,000
Subsidies...	—	3,037	—	—	42,042
Swine Plague...	—	—	392	158	—
Total	34,191	178,066	319,599	395,051	114,180
Grand Total	626,546	1,700,935	3,076,798	3,333,327	3,494,954

3. Banking Organs and Currency System.—Properly speaking, both banking organs and a currency system were lacking in Formosa before it was brought under the Japanese sway. In fact no particular necessity was felt about them, in that the trade, besides being practically controlled by Chinese merchants residing on the opposite coast of China, and by a small number of resident foreigners, was insignificant, for Formosa had only a few products to sell and could buy only a little of foreign goods.

Banking Organs.

The establishment of a number of branch offices by the Thirty-fourth Bank of Osaka soon after the advent of the new régime and the establishment of the Formosan Bank, the central banking organ in the island, in 1899 have ushered in a new order of things that were adopted for the requirements of the time. Data of this central bank were mentioned under the section of Finance.

Whatever currency Formosa possessed consisted in copper and silver coins minted by other countries. These, moreover, were not circulated according to their denomination, they were used by weight. Practically therefore they were nothing less than bullion, and Formosa was a silver bullion mono-metallic country, if it is possible to use such a term. The 1-*yen* silver coins which Japan introduced into Formosa found there a ready welcome, and those coins were not mutilated as old foreign silver and as they were finer they were preferred by the natives in preference to all others.

Currency.

The established custom in the island being in favor of silver currency, the authorities decided, when they adopted in 1897 gold mono-metallism in Japan proper, to regard a Formosan currency system as an exception, and to leave this new dominion as a sort of silver country. It was decided at the same time that the official quotation of the gold price of silver should be determined and proclaimed from time to time, and that the silver quotations prevailing at Hongkong and Shanghai should be adopted for determining this standard price for Formosa, so that the intimate tradal relation existing between the island and China should be promoted as much as possible.

The first official quotation was fixed at 1037 pieces of stamped silver *yen* against 1,000 *yen* of gold, or 1 *yen* piece against 0.964

yen of silver. The Formosan coins bore a stamped mark because they were the pieces that had been withdrawn from circulation in Japan proper in consequence of the adoption of the gold standard and because the authorities had to provide against the trouble and risk of exchanging the withdrawn coins with gold.

The determination of the official quotation on the silver price prevailing in China was soon judged to be subject to inconvenience, for very often that price was not uniform with the quotation in the world's silver market. At present, therefore, the official quotation is based on the price ruling on that market.

The silver currency, both stamped pieces and subsidiary coins, that was put for circulation in Formosa from September 1900 to May 1902 reached a rather large volume. At the same time other coins and the Formosan Bank note were in circulation, so that the total reached the following amount :—

	yen.
Stamped *yen* Pieces	23,657,428
Subsidiary Coins	1,345,799
Foreign Coins	3,228,856
Nickel and Copper Pieces	223,000
Formosan Bank Notes	3,353,631
Total	31,808,714

The foregoing volume seems to be too excessive for Formosa, where trade is still primitive and industry is but poorly developed. But it must be remembered that the natives can not yet divest themselves of their simple custom of secretly hoarding silver. Consequently the amount thus withdrawn from circulation must be quite large. It is hardly necessary to add that the custom of the natives towards currency being so primitive they do not themselves care at all about monetary system.

VIII. COMMUNICATIONS.

In this chapter will be briefly described the conspicuous features in the communication affairs of Formosa, that is to say, railroad and highways.

1. RAILROAD.—Formosa possessed even before its annexation by Japan about 62 miles of railroad laid between Kelung and Shimchiku via Taihoku. This line was built during the Governorship of Liu mentioned in the preceding part of this section. The railroad was, however, poor in construction and defective in workingt Gradient erred on the side of excess while curve erred on tha. of the opposite nature. Traffic management was so defective that even fares and freights were almost daily subject to changes, not to say nothing about irregularity of time-table. In justice to the energetic administration, comparatively speaking of Liu, it ought to be added, however, that this line proved immensely beneficial to our troops of subjugation sent at first to restore order in the island, for Formosa was notorious, as is also the case even to-day, for the absence of regular highways.

Private Railroad Enterprise.

With the restoration of peace, a number of capitalists in Japan proper promoted the Formosan Railway Company with the idea of laying railroads in the island by obtaining some help from the Formosan Government. This undertaking flashed in the plan and the company was wound a few months after its creation, for further investigations had convinced the promoters that even with the help which the Government promised to accord them, it would be hardly possible to derive any satisfactory profit from this business.

Government Railroad Programme.

With this disappearance of private enterprise, the Government decided to undertake the scheme on its own account. In 1900 the Formosan Undertaking Loan Law, mainly compiled with the object of laying railroads, was approved by the Diet and promulgated, and the programme of laying a trunk line through Formosa and of improving the existing line was elaborated. This programme

contemplated an outlay of 28,800,000 *yen* spread over ten years to end with the 1909 fiscal year.

The improvement of the existing line first demanded the attention of the authorities. The work was started in the 1899 fiscal year. The whole line was thoroughly reconstructed, and as even the old track was abandoned in greater part the Kelung-Shinchiku line existing at present is a complete metamorphosis of the old line, both in engineering work and traffic management.

Improvement of Existing Line.

At the same time the work of laying a new line, about 170 miles from Shinchiku to Takao, was commenced from both terminii. Of that length the Takao-Kagi section, extending 66 miles 60 chains, was completed in April, 1903 and opened to traffic, while in the northern half the Shinchiku-Sanshaka section of 32 miles 12 chains was opened to traffic in October of the same year.

New Railroad Work.

Besides the trunk line, a deflection to Tansui, 13 miles 12 chains, was built in August of 1902 and the shipping facilities of that harbor were considerably improved.

Considering the condition of things in Formosa, the railroad business can hardly be called a paying investment. Nevertheless traffic receipts and disbursements have begun to present a satisfactory aspect. Thus in the 1902 fiscal year receipts were estimated to almost cover ordinary .disbursements, the former put at 722,535 *yen* and the latter at 724,021 *yen*. The disbursement account shows an excess of only 38,000 *yen* approximately compared with that of the preceding year, but the excess of the other account amounts to as much as 240,380 *yen*.

Traffic Account.

2. Light Railroad.—There are two kinds of light railroad in Formosa, one constructed for military purposes and the other for ordinary purposes. The former was the first thing which our subjugation army had to attend to on their arrival in the island, as this was absolutely necessary for their operation. The line was laid in a hurry between Shinchiku, the southern terminus of the then existing Formosan railroad, and Hozan, the two extremities being separated by 185 miles. With such creditable celerity was the work conduct-

Military Light Railroad.

ed that it was completed in a few months and for the first time in its history the northern and the southern halves of the island obtained a complete line of overland communications, though it was necessarily imperfect. With the construction of a regular track, the light railroad that connected the same places was removed, and at present the light tracks originally laid for military purposes altogether measure 125 miles, trunk line and deflections added together.

Light Railroad for Ordinary Purposes.

The light railroad constructed for ordinary use is yet an insignificant affair, comparatively speaking, for at present the working line that between Koshun and Taihanroku, measures only 2½ miles. The other lines contemplated are:—

	m.	ch.
Rokko—Shokwa	7.	34
Banshoryo—Nanshiko	19.	55
Hozan—Ako	10.	55
Gilan—Suwo	15.	00
Total	52.	64

It ought to be added that the light railroads in Formosa are pushed by men.

3. Highways.—It may properly be said that highways, as the word is used in ordinary places, do not exist in Formosa, for whatever road there is in the island is not better than animal tracks. This absence of the most common means of intercourse and communication may be accounted for from the fact that the islanders used to carry on intercourse more with the people on the opposite coast and less among themselves, while transportation of goods was made almost exclusively on men's backs. The presence of many unruly streams across the roads must have also deterred the construction of good highways. In order to improve this serious defect the Governor-General issued Regulations of Roads in 1900, and surveying has been completed for most of the contemplated routes. In many parts of Tainan and vicinity the work of road-making has been completed, or is about to be completed.

IX. EDUCATION, HYGIENE, RELIGION.

A. Education.

1. General Remarks.—Educational affairs in Formosa are divided into three departments according to as many classes of people residing in it, that is to say, (1) education for people from Japan proper, (2) education for the natives of Chinese origin, and (3) education for the aborigines.

2. For Japanese from Japan Proper.—The provision for giving instruction to people from Japan proper consists of primary schools only where their children receive elementary instruction. Thirteen schools of this description exist in various parts of the island. According to the latest report, the teaching staff comprised 60 teachers and the pupils numbered about 2,000. The curriculum is identical with that prevailing in the mother country, so that the pupils taught in a Formosan school are easily enabled to follow the study even when they are transferred to a school there.

3. For the Natives.—Educational arrangements for the natives are receiving the best attention of the authorities. The Medical School, Japanese Language School, Normal School, and Communal Schools all exist for the benefit of their children or their brothers and sisters.

The Medical School may be regarded as the only school of the kind existing in the Far East devoted to giving a regular course of modern science and practice of medicine to students of Chinese origin. Situated in Taihoku, its course covers five years, the instruction given in Japanese. At present over 130 students attend school and already three graduates have been sent out.

The National Language School was originally intended to serve a double purpose, one being to give training to ordinary Japanese in the native languages to qualify them to act as interpreters, translators and as officials, and the other object being to teach Japanese to the islanders. The department for the native has been considerably modified, and at present it comprises several departments, as technical course (railroad, telegraph, agriculture), secondary education course, and girls' course.

The Normal School exists to train native youths as teachers of

native primary schools. A number of graduates have already been turned out.

Communal Schools present the most flourishing aspect for they are institutions where the Formosan native boys receive elementary education. At present 130 schools and branch schools of this grade exist in various parts of the island. The teaching staff comprises 521 teachers and the attendance numbers 18,149. Besides there are about 1800 "family-schools" kept mostly in old style by native schoolmasters, and they possess as many as 32,000 attendants approximately.

4. For the Aborigines.—The National Language Training School is the first institution established by the Government. Originally it was intended to teach only the sons and brothers of the islanders, but as more perfect educational organs for them have since been erected, at present this school is devoted to giving elementary instruction to the children of aborigines. The school list contains 723 such pupils. The institutions bearing the name of the National Language Training Schools number five main schools and about eleven branch schools, all situated in the aborigine's districts or at places adjoining them.

5. Girl's Education.—The only place where girls are exclusively taught is a girl's department established at Shiringai of the National Language School. There the girls are taught in subjects of elementary education and also in some handicraft work. A number of little girls also receive education at several communal schools, but in classes of their own, for the Formosan natives are strict against co-education, faithfully adhering to the antiquated Confucian maxim that men and women should not sit in the same room after they have grown above seven years old. The authorities are trying to disillusion the natives of this absurd notion.

The other educational institutions are missionary schools, both by foreigners and Japanese Buddhists; a museum and a library.

B. Hygiene.

1. Public Hygiene.

1. General Remarks.—Matters of public hygiene necessarily show a deplorable defect in Formosa; in fact any provision on this subject may be said to have been practically absent formerly.

2. Water-Supply.—The only thing worth mentioning in this respect is the boring of a number of artesians wells in Taihoku during the Governorship of Liu, by engaging for that purpose several well-diggers from Japan.

The well-boring was extensively carried out by the new rulers of the island and in Taihoku and neighborhood alone over 800 wells have been bored. The well-water obtained from them is not judged absolutely wholesome, though far superior and healthier than the contaminated river water and the water from the shallow native wells, both of which the native were accustomed to use formerly as drinking-water. This fruitful source of epidemics in Formosa has therefore been deprived of much of its virulence.

In Kelung and Tansui, where the supply of wholesome water was even more defective than in Taihoku, water-works have already been constructed. Well-borings have also been accomplished in several other places, while investigations are being conducted at Taihoku and other towns for constructing regular water-works.

3. Street Improvements and Sewerage.—The streets in all the cities of Formosa are now undergoing thorough re-construction, for besides being narrow and defective in the facilities of communication, they have obstructed considerably the drainage of refuse water. At the sametime the re-construction or more properly a new construction of sewer-ways is being carried on in several of those cities, for sewer-ways, in the ordinary acceptance of the term, have been absent in them.

This work of street improvement and sewerage construction is being carried on a large scale in Taichu (Mid-Formosa) than in other cities, for the Government, in anticipation of the important part which the place is destined to play in the island where it occupies the central position, has decided to undertake this work while it admits of easier and cheaper execution, for at present

Taichu is the least populous and flourishing of all the cities in the island. The programme of the work involves an outlay of about 1,200,000 *yen*, and, started in the 1899 fiscal year, about a fourth part of the contemplated work has been completed.

4. Provisions against Epidemic Diseases.—The appearance in May, 1896, of pest in Anping occasioned the necessity of enforcing some preventive measures, and this was the first instance in the history of Formosa of the enforcement of such sanitary provision. The authorities had to experience considerable trouble at first, owing to the ignorance of the people. They regarded the Government measures at best with indifference and withheld from rendering any cooperative service, without which an official business of this kind can never be a success.

The Government subsequently modified the rules originally transplanted wholesale from Japan proper to satisfy the urgent need of the occasion, and made them more amenable to the obtuse notions of the natives. They have acquired some knowledge of the importance of the preventive measures and in some places lockup hospitals have been established with the contributions of the people, while in a larger number of places the inhabitants have organized themselves into sanitary corporations.

Though in a highly imperfect way owing to lack of proper provision Quarantine regulations were also enforced in Kelung, Tansui, Anping, Takao and Rokko in September, 1896, when cases of pest were reported from several places on the opposite coast of China. By the beginning of the 1899 fiscal year a *bona fide* arrangement had been completed at Kelung, and rules specially applicable to Formosa were enforced. The central quarantine office exists at Kelung and a branch at Tansui and other ports.

2. Medical Affairs.

1. Hospitals.—At present the authorities maintain a Government hospital at Taihoku, Kelung, Shinchiku, Taichu, Kagi, Tainan, Hozan, Gilan, Taito, and Hokō (Pescadores), with a number of branch hospitals established at less important places.

2. Medical Practitioners.—There are several kinds of medical practitioners doing business in the island. First there are doctors

who in return for some official protection, are made to take charge of matters of sanitary administration as assistants and advisers of regular officials. At first such doctors numbered 150, for at that time the presence of regular practitioners possessing knowledge of modern medicine was small in the island. As these doctors have subsequently increased in number, the necessity of maintaining so many official doctors was no longer felt and at present they number 76.

Licensed practitioners from Japan proper number 43.

Lastly there are native practitioners who are permitted to pursue the occupation in deference to their previous experience, for though these men are, devoid of knowledge of modern medicine, and are not qualified for the task, the natives from their custom are still disposed to seek their help. These quasi-practitioners number 1,938.

3. Opium.

1. Opium Administration.—The question of opium-smoking was one of the gravest affairs which demanded the foremost attention of the Governor General's Office as soon as it was installed in the island. In other words, it had to adopt either one of these alternatives; namely, should the Government prohibit, as in Japan proper, this deleterious practice in the island? or should the Government adopt a policy of toleration in deference to the long-established custom among the natives, vicious as that custom is?

At last the policy of moderation prevailed, and the Government decided to adopt the scheme of gradual suppression and to effect by that means the eradication of the evil from this new dominion.

2. Modus Operandi.—In pursuance of that policy, the authorities drew up a regular programme of opium administration, combining the two functions both of permission and discouragement. In other words, that programme issued special permission only to confirmed smokers. This permission had to be given under strict control, so that it may act in perfect unison with the main aim of gradual suppression. To effect this object, a list of licensed smokers had to be compiled, the Government had to control the supply of opium in its hands, and the sale of this drug had to be restricted to licensed agents, while the Police to enforce strict vigilance to prevent all practices infringing the rules of opium-smoking. At the

same time medical practitioners and others were enjoined to incalcate, whenever they had opportunities, the evil of smoking among the people at large, and school-teachers were also bidden to explain in the schoolrooms to their pupils the injurious effect of this habit.

3. Licensed Smokers.—The first list drawn up toward the end of 1897 as to the number of regular smokers contained only 51,581. This was considerably below the mark, for the authorities, judging from various data, had estimated the number of smokers at about 180,000. It was evident that a greater part of smokers did not report themselves at all from the desire of evading the fee of the smoking license which was fixed at the rate of from 20 *sen* to 3 *yen* a month. The grades of the license were therefore abolished and in place of monthly payment the fee was reduced to only 30 *sen* irrespective of grades and at one time only. At the same time the Police were made to exercise strict vigilance to prevent concealment. In September, 1900, the list compiled in that way was completed and it contained 169,064 smokers. This was judged fairly accurate nearly coinciding with the estimate number of 180,000, for no small number of smokers must have either died or given up the practice since that estimate was compiled more than three years ago.

Since that time the number of licensed smokers has gone on declining, either through death or discontinuance, and at the end of March, 1902, it stood at 152,044. It is hardly necessary to add that those smokers are only natives of the island, for people of Japan proper and also foreigners are strictly forbidden from indulging in this vile and injurious practice. The authorities are confident that judging from past experiences they may be enabled to eradicate the baneful custom from this island in about thirty or forty years.

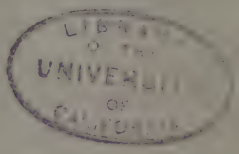
4. Opium Agents.—The privilege of selling opium is granted only to natives of established standing. At the end of March, 1902, these agents numbered 1,254 throughout the island.

C. Religions.

The religions in vogue in the island are Buddhism and Christianity, for that kind of ancestor-worship that previously existed and still exists in the island can hardly deserve the title of religion.

1. Buddhism.—This is by far the most flourishing religion, and possesses over 90 preaching places and about 30,000 believers. The Buddhist propagandists are mostly from Japan proper.

2. Christianity.—Christianity in the island may be classified into three national divisions for the sake of convenience; namely, Catholics who are relics of the old Spanish occupation, the English Protestant Church, and lastly the Christianity propagated by Japanese missionaries. Of the three, the English Protestantism conducted by Rev. William Campbell appears to be most active and prosperous. The churches of all sects and nationalities number about 90 and their believers about 10,000.



The End.

WEIGHT AND MEASURES.

The	*Kin*=160 *momme*	=1.325 lb. avoirdupois.
„	*Kwan*=1,000 *momme*	=8.281 lbs. „
„	*Shaku*...	=.994 foot.
„	*Sun*=1/10 *shaku*	=1.193 inches.
„	*Ken*=6 *shaku*	=5.965 feet.
„	*Chō*=60 *ken*	=1/15 mile, 5.4229 chains.
„	*Ri*=36 *chō*	=2.44 miles.
„	*Ri* sq.	=5.9552 sq. miles.
„	*Chō*, land measure	=2.45 acres.
„	*Koku*, liquid	=39.7033 gallons.
„	„ dry...	=4.9629 bushels.
„	*To*, liquid...	=3.9703 gallons.
„	„ dry	=1.9851 pecks.

1 metre=3.3 *shaku*.

1 gram=0.26667 *momme* (4/15 *momme*).

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